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ABSTRACT

Developed as part of the Marine Corps Institute (MCI) correspondence training program, this course on meats and meat cookery is designed to help the Marine cook to identify, handle, process, and serve meats, poultry, fish, and shellfish. Introductory materials include specific information for MCI students and a study guide (guidelines to complete the course). The 13-hour course consists of five chapters or lessons. Each unit contains a text and a lesson sheet that details the study assignment and sets forth the lesson objective. A written assignment is also provided. Topics covered in the lessons include beef and veal; pork, lamb, and other meats; fish and shellfish; poultry products; and principles for cooking meats, poultry, fish, and shellfish. (YLB)

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33.18a

1. PURPOSE

This publication has been prepared by the Marine Corps Institute for use with MCI course, Meats and Meat Cookery.

2. APPLICABILITY

This manual is for instructional purposes only.

E. J. LLOYD
Lieutenant Colonel, U. S. Marine Corps
Deputy Director

# *INFORMATION*

# *FOR*

# *MCI STUDENTS*

Welcome to the Marine Corps Institute training program. Your interest in self-improvement and increased professional competence is commendable.

Information is provided below to assist you in completing the course. Please read this guidance before proceeding with your studies.

1. MATERIALS

Check your course materials. You should have all the materials listed in the "Course Introduction." In addition you should have an envelope to mail your review lesson back to MCI for grading unless your review lesson answer sheet is of the self-mailing type. If your answer sheet is the pre-printed type, check to see that your name, rank, and social security number are correct. Check closely, your MCI records are kept on a computer and any discrepancy in the above information may cause your subsequent activity to go unrecorded. You may correct the information directly on the answer sheet. If you did not receive all your materials, notify your training NCO. If you are not attached to a Marine Corps unit, request them through the hotline (autovon 288-4175 or commercial 202-433-4175).

2. LESSON SUBMISSION

The self-graded exercises contained in your course are not to be returned to MCI. Only the completed review lesson answer sheet should be mailed to MCI. The answer sheet is to be completed and mailed only after you have finished all of the study units in the course booklet. The review lesson has been designed to prepare you for the final examination.

It is important that you provide the required information at the bottom of your review lesson answer sheet if it does not have your name and address printed on it. In courses in which the work is submitted on blank paper or printed forms, identify each sheet in the following manner:

DOE, John J. Sgt 333-11-9999
08.4g, Forward Observation
Review Lesson
Military or office address
(RUC number, if available)

Submit your review lesson on the answer sheet and/or forms provided. Complete all blocks and follow the directions on the answer sheet for mailing. Otherwise, your answer sheet may be delayed or lost. If you have to interrupt your studies for any reason and find that you cannot complete your course in one year, you may request a single six month extension by contacting your training NCO, at least one month prior to your course completion deadline date. If you are not attached to a Marine Corps unit you may make this request by letter. Your commanding officer is notified monthly of your status through the monthly Unit Activity Report. In the event of difficulty, contact your training NCO or MCI immediately.

3. MAIL-TIME DELAY

Presented below are the mail-time delays that you may experience between the mailing of your review lesson and its return to you.

| | TURNAROUND MAIL TIME | MCI PROCESSING TIME | TOTAL NUMBER DAYS |
|---|---|---|---|
| EAST COAST | 16 | 5 | 21 |
| WEST COAST | 16 | 5 | 21 |
| FPO NEW YORK | 18 | 5 | 23 |
| FPO SAN FRANCISCO | 22 | 5 | 27 |

You may also experience a short delay in receiving your final examination due to administrative screening required at MCI.

4. GRADING SYSTEM

| LESSONS | | | EXAMS | |
|---|---|---|---|---|
| GRADE | PERCENT | MEANING | GRADE | PERCENT |
| A | 94-100 | EXCELLENT | A | 94-100 |
| B | 86-93 | ABOVE AVERAGE | B | 86-93 |
| C | 78-85 | AVERAGE | C | 78-85 |
| D | 70-77 | BELOW AVERAGE | D | 65-77 |
| NL | BELOW 70 | FAILING | F | BELOW 65 |

You will receive a percentage grade for your review lesson and for the final examination. A review lesson which receives a score below 70 is given a grade of NL (no lesson). It must be resubmitted and PASSED before you will receive an examination. The grade attained on the final exam is your course grade, unless you fail your first exam. Those who fail their first exam will be sent an alternate exam in which the highest grade possible is 65%. Failure of the alternate will result in failure of the course.

5. FINAL EXAMINATION

ACTIVE DUTY PERSONNEL: When you pass your REVIEW LESSON, your examination will be mailed automatically to your commanding officer. The administration of MCI final examinations must be supervised by a commissioned or warrant officer or a staff NCO.

OTHER PERSONNEL: Your examination may be administered and supervised by your supervisor.

6. COMPLETION CERTIFICATE

The completion certificate will be mailed to your commanding officer and your official records will be updated automatically. For non Marines, your completion certificate is mailed to your supervisor.

7. RESERVE RETIREMENT CREDITS

Reserve retirement credits are awarded to inactive duty personnel only. Credits awarded for each course are listed in the "Course Introduction." Credits are only awarded upon successful completion of the course. Reserve retirement credits are not awarded for MCI study performed during drill periods if credits are also awarded for drill attendance.

8. DISENROLLMENT

Only your commanding officer can request your disenrollment from an MCI course. However, an automatic disenrollment occurs if the course is not completed (including the final exam) by the time you reach the CCD (course completion deadline) or the ACCD (adjusted course completion deadline) date. This action will adversely affect the unit's completion rate.

9. ASSISTANCE

Consult your training NCO if you have questions concerning course content. Should he/she be unable to assist you, MCI is ready to help you whenever you need it. Please use the Student Course Content Assistance Request Form (ISD-1) attached to the end of your course booklet or call one of the AUTOVON telephone numbers listed below for the appropriate course writer section.

| | |
|---|---|
| PERSONNEL/ADMINISTRATION | 288-3259 |
| COMMUNICATIONS/ELECTRONICS/AVIATION | |
| NBC/INTELLIGENCE | 288-3604 |
| INFANTRY | 288-3611 |
| ENGINEER/MOTOR TRANSPORT | 288-2275 |
| SUPPLY/FOOD SERVICES/FISCAL | 288-2285 |
| TANKS/ARTILLERY/INFANTRY WEAPONS REPAIR | |
| LOGISTICS/EMBARKATION/MAINTENANCE MANAGEMENT/ | |
| ASSAULT AMPHIBIAN VEHICLES | 288-2290 |

For administrative problems use the UAR or call the MCI HOTLINE: 288-4175.

For commercial phone lines, use area code 202 and prefix 433 instead of 288.

# STUDY GUIDE

## 10. STUDY HINTS

By enrolling in this course, you have shown a desire to improve the skills you need for effective job performance, and MCI has provided materials to help you achieve your goal. Now all you need is to develop your own method for using these materials to best advantage.

The following guidelines present a four-part approach to completing your MCI course successfully:

- Make a "reconnaissance" of your materials;
- Plan your study time and choose a good study environment;
- Study thoroughly and systematically;
- Prepare for the final exam.

### a. MAKE A "RECONNAISSANCE" OF YOUR MATERIALS

Begin with a look at the course introduction page. Read the COURSE INTRODUCTION to get the "big picture" of the course. Then read the MATERIALS section near the bottom of the page to find out which text(s) and study aids you should have received with the course. If any of the listed materials are missing, see paragraph 1 of this pamphlet to find out how to get them. If you have everything that is listed, you are ready to 'reconnoiter' your MCI course.

Read through the table(s) of contents of your text(s). Note the various subjects covered in the course and the order in which they are taught. Leaf through the text(s) and look at the illustrations. Read a few lesson questions to get an idea of the types that are asked. If MCI provides other study aids, such as a slide rule or a plotting board, familiarize yourself with them. Now, get down to specifics!

### b. PLAN YOUR STUDY TIME AND CHOOSE A GOOD STUDY ENVIRONMENT

From looking over the course materials, you should have some idea of how much study you will need to complete this course. But "some idea" is not enough. You need to work up a personal study plan; the following steps should give you some help.

(1) Get a calendar and mark those days of the week when you have time free for study. Two study periods per week, each lasting 1 to 3 hours, are suggested for completing the minimum two lessons required each month by MCI. Of course, work and other schedules are not the same for everyone. The important thing is that you schedule a regular time for study on the same days of each week.

(2) Read the course introduction page again. The section marked ORDER OF STUDIES tells you the number of lessons in the course and the approximate number of study hours you will need to complete each lesson. Plug these study hours into your schedule. For example, if you set aside two 2-hour study periods each week and the ORDER OF STUDIES estimates 2 study hours for your first lesson, you could easily schedule and complete the first lesson in one study period. On your calendar you would mark "Lesson 1" on the appropriate day. Suppose that the second lesson of your course requires 3 study hours. In that case, you would divide the lesson in half and work on each half during a separate study period. You would mark your calendar accordingly. Indicate on your calendar exactly when you plan to work on each lesson for the entire course. Do not forget to schedule one or two study periods to prepare for the final exam.

③ Stick to your schedule.

Besides planning your study time, you should also choose a study environment that is right for you. Most people need a quiet place for study, like a library or a reading lounge; other people study better where there is background music; still others prefer to study out-of-doors. You must choose your study environment carefully so that it fits your individual needs.

c. STUDY THOROUGHLY AND SYSTEMATICALLY

Armed with a workable schedule and situated in a good study environment, you are now ready to attack your course, lesson by lesson. You will find your first study assignment and your first written assignment on page 1 of lesson 1. On this page you will also find the lesson objective, a statement of what you should be able to do after completing the assignments.

DO NOT begin by reading the lesson questions and flipping through the text for answers. If you do so, you will prepare to fail, not pass, the final exam. Instead, proceed as follows:

① Read the study assignments carefully. Make notes on the ideas you feel are important and mark any portion you have difficulty understanding.

② Reread the portions you marked in step ① . When you have mastered the study assignment, start to work on the written assignment.

③ Read each question in the written assignment carefully.

④ Answer all questions that you are sure of and leave the others blank.

⑤ Reread the portions of the study assignment that explain the items you left blank.

⑥ Complete the written assignment and send it to MCI for grading.

⑦ Go on to the next lesson.

Follow the same procedure for each lesson of the course. If you have problems with the text or lesson questions that you cannot solve on your own, ask your section OIC or NCOIC for help. If he cannot aid you, request assistance from MCI on the MCI Student Course Content Assistance Request included in this pamphlet.

When you have passed the final lesson, the final exam will be sent to your training officer or NCO.

d. PREPARE FOR THE FINAL EXAM

How do you prepare for the final exam? Follow these three steps:

① Review each lesson objective as a summary of what was taught in the course.

② Reread all portions of the text that you found particularly difficult.

③ Review all the lesson questions, paying special attention to those you missed the first time around.

If you follow these simple steps, you should do well on the final. GOOD LUCK!

## PREFACE

This course was designed for you, the Marine cook. Its purpose is to help you identify, handle, process, and serve the most savorous food items that appear on your unit menu. These foods are generally called meats; however, they are further categorized as meats, poultry, fish, and shellfish. This text will help you to identify the various types and cuts of meat procured and to select the most desirable method to cook, carve, and serve them.

## SOURCE MATERIALS

| | |
|---|---|
| NavSup Publication 421<br>C8900-SL | Food Service Operations, Jan 1971, w/Ch 1, Apr 1972<br>Federal Supply Catalog, Stock List, FSC Group 89, Subsistence, Jan 1981 |
| NavMed P-5010<br>MCO P10110.16C | Manual of Naval Preventive Medicine, (Chapter 1), Apr 1975<br>Armed Forces Recipe Service, 1 May 1980 |

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# MEATS AND MEAT COOKERY

## Course Introduction

The MEATS AND MEAT COOKERY course is designed to promote occupational interest and increase meal handling skills of personnel in MOS 3371, private through staff sergeant. It provides information and procedures to increase their effectiveness through identification, handling, processing, and proficiency in the cooking and serving stages of these essential food items. The intent of this course (when used in conjunction with the Armed Forces Recipe Service) is to help produce an award winning meat entree at every serving.

## ORDER OF STUDIES

| Lesson Number | Study Hours | Reserve Retirement Credits | Subject Matter |
|---|---|---|---|
| 1 | 2 | 0 | Beef and Veal |
| 2 | 2 | 1 | Pork, Lamb, and Other Meats |
| 3 | 2 | 1 | Fish and Shellfish |
| 4 | 2 | 0 | Poultry Products |
| 5 | 3 | 1 | Principles For Cooking Meats, Poultry, Fish, and Shellfish |
| | 2 | 1 | FINAL EXAMINATION |
| | 13 | 4 | |

EXAMINATION: Supervised final examination, without textbooks or notes; time limit, 2 hours.

MATERIALS: MCI 33.18a, Meats and Meat Cookery.

Lesson sheets and answer sheets.

RETURN OF MATERIALS: Students who successfully complete this course are permitted to keep the course materials.

Students disenrolled for inactivity or at the request of their commanding officer will return all course materials.



* * *

Chapter 1

# BEEF AND VEAL

## 1-1. INTRODUCTION

Meat is the flesh of any animal used for human food. In this text, the term meat applies specifically to beef, veal, pork, lamb, and rabbit. Meats are the main attraction in almost every meal. They are served in varied forms and styles to present an appetizing appearance. Beef is the most widely used and most popular meat item that appears on Marine Corps menus. Veal is smaller in size and not as popular as beef, but it is structurally similar to beef and will be presented jointly in this portion of your text.

## 1-2. CLASSIFICATION OF MEATS

Meats are classified by the manner and form in which they are received. The various classes of meats are:

a. Variety meats. These are the edible glands and organs of meat animals, such as liver, brains, and kidneys.

b. Meat food products. These are materials derived from any edible portion of meat animals and combined with other food ingredients. Corned beef hash, chili, and soups are good examples.

c. Fabricated meats. These are meats that have been fully or partially boned and trimmed. All types of meats procured for Marine Corps use are fabricated to some extent.

d. Processed meats. These include smoked and cured meats, specialty canned meats, and dried beef.

e. Boneless beef. This is completely boned meat cut from the carcass of beef cattle. Steers (castrated young male beef cattle) and heifers (female beef cattle that have never borne calves) are the two kinds of beef cattle obtained for military use. They produce their best grades of high quality beef at early ages.

f. Boneless veal. Veal is procured as boneless cuts from male or female beef cattle usually slaughtered at approximately 3 months of age and always less than 1 year.

g. Pork. Pork is procured in the forms of boneless and semiboneless cuts from hogs. Some variety type pork items are used also. These cuts are obtained from young hogs no more than 12 months of age.

h. Lamb. Lamb cuts are procured from immature sheep of either sex at approximately 12 months of age.

i. Rabbit. Rabbit is procured only in the form of cut-up frozen parts. Rabbit will be discussed further in chapter 2.

## 1-3. INSPECTION AND GRADING OF BEEF AND VEAL

a. Inspection. All meats sold through commercial sources are inspected for wholesomeness by various United States agencies. In addition to these inspections, meats procured by the Defense Personnel Support Center for military use are inspected by the United States Department of Agriculture (USDA). The object of this more detailed inspection is to:

(1) Protect the health of Armed Forces personnel against disease transmitted through spoiled, damaged, or contaminated foods.

(2) Determine if the foods comply with the specifications contained in the purchasing contract. Upon completion of the inspection and acceptance, the meat is stamped by the USDA (fig 1-1) and prepared for shipment.

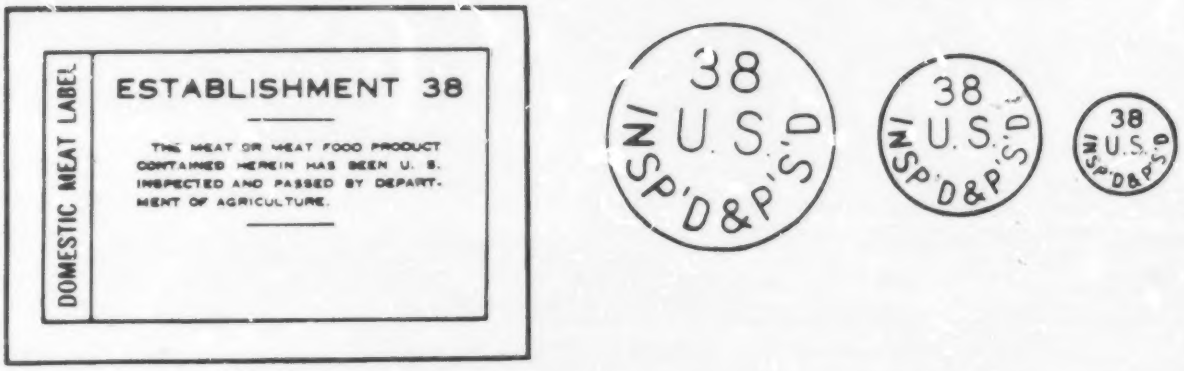
DOMESTIC MEAT LABEL
ESTABLISHMENT 38
THE MEAT OR MEAT FOOD PRODUCT CONTAINED HEREIN HAS BEEN U. S. INSPECTED AND PASSED BY DEPARTMENT OF AGRICULTURE.
38 U.S. INSP'D D&P'S'D
38 U.S. INSP'D D&P'S'D
38 U.S. INSP'D D&P'S'D

Fig 1-1. United States Department of Agriculture stamps.

b. Grading. Meat grading is a system of classifying or sorting meats into quality classes. The United States Department of Agriculture (USDA) has established grading standards which are used as a guide in describing definite carcass classes and grades for beef, veal, lamb, and pork. Graded meats are always procured for the Armed Forces to insure complete uniformity and standardization of the meat cuts contracted for. Only USDA graders can certify a grade of meat with the "US" prefix (USDA choice, for example). Federal specifications for meat are based on USDA grades for standard market classes of animals as shown in figure 1-2.

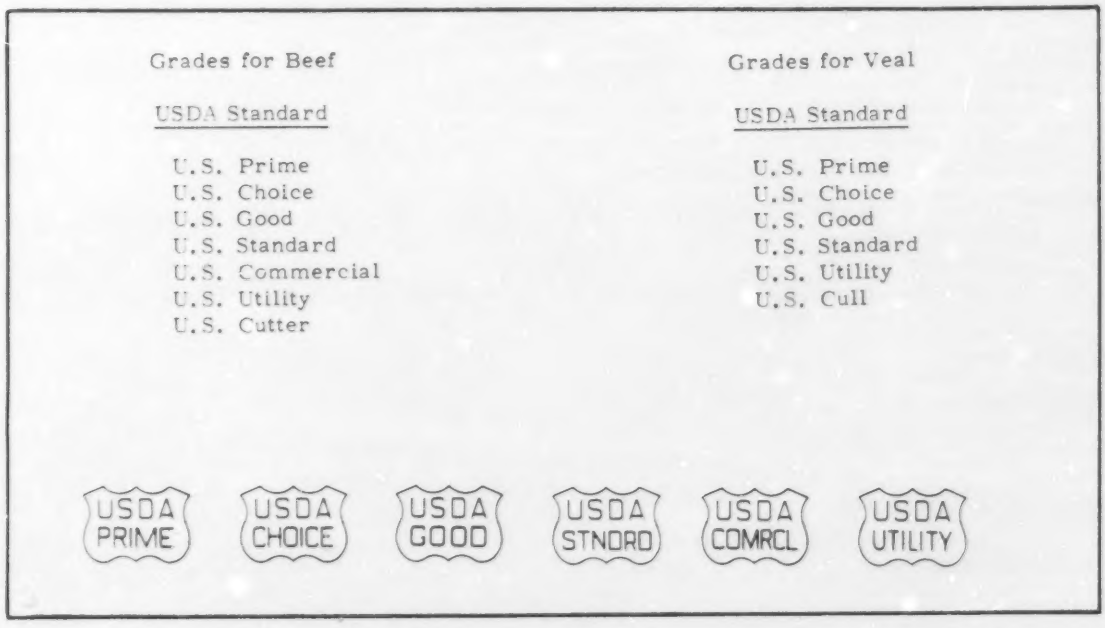


Fig 1-2. USDA meat grades and stamps.

It has been standard procedure to procure US good grade beef cuts. The US good grade of beef is economical and produces a very good finished meat when properly cooked. It was considered advantageous for military use. As of July 1, 1974, the military specification standards for the procurement of beef were raised to procure U.S. choice grade of beef. This grade of beef has excellent fat covering and intermingling fat through the lean. It is considered to be the most popular grade of beef and produces excellent finished meat dishes with careful cooking. The top grade of beef (US prime) is considered extremely wasteful due to fat coverings which results in excess trimming losses when preparing it to be cooked. This grade of beef could prove economically disastrous if procured for military use.

## 1-4. STRUCTURE AND COMPOSITION OF BEEF AND VEAL

What causes some meat cuts to be tender and some to be tough? Excluding improper cooking practices the answer can be stated simply. The tenderness of a piece of meat depends on the amount of connective tissue in the meat, the location of the muscle on the animal, and the amount of fat in the meat muscle. Figure 1-3 illustrates the characteristics of a cut of meat.

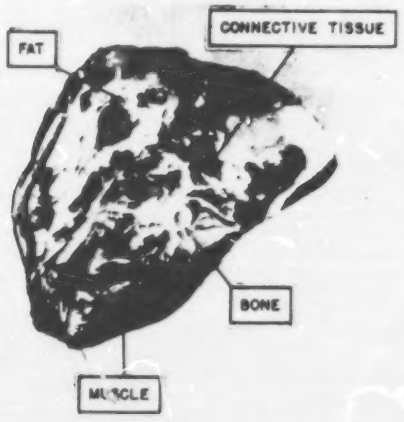


Fig 1-3. Meat muscle showing presence of fat and connective tissue.

a. Meat muscle. The meat muscle is composed of both solids and moisture. Each meat muscle is surrounded by a coating of protective fat. In addition, fat cells are distributed inside and between the fibers of the meat muscle. This intermingling of fat is called marbling and is of extreme importance in determining the cooking method for a particular piece of meat. The meat muscle is held to the bone by tendons and ligaments that are composed of connective tissue. Much of the connective tissue is eliminated with the bones by procuring meats as boneless cuts.

b. Connective tissue. All edible meats are made up of muscles composed of bundles of lean microscopic fibers held together and surrounded by connective tissue. It could be said that connective tissue functions like a binder or a wrapper; it simply holds the meat fibers together. It also contains fat cells, blood vessels, and nerves. The percentage of connective tissue within a cut of meat largely determines its tenderness. The location from which the cut of meat is obtained on the animal's carcass also relates to the tenderness of the cut. Muscles from the neck, legs, shoulder, and joints contain concentrated connective tissue because they provide the animal with locomotion. These meat cuts are of a less tender nature. Muscles obtained from the rib and loin (center back) areas primarily provide support for the animal and contain very little connective tissue. These muscles are known as muscles of suspension and produce very tender cuts of meat.

c. Fat. The proportion of lean-to-fat-to-bone in meat changes as meat animals put on fat, and the flavor and quality of meats improve accordingly. Fat intermingled generously within the lean fibers means that the meat is adequately marbled and provides a juicier and generally more tender cut of meat. The protective fat covering should never be completely trimmed away from a piece of meat. During the cooking process, the fat melts and its moisture softens the tough connective tissues of the meat and aids in rendering the cut more tender.

## 1-5. DESCRIPTION OF BEEF CUTS

The Marine Corps purchases beef in the form of boneless cuts with the exception of a few cuts (some bone-in) used on special occasions. These cuts will now be identified with a brief description of the USDA Institutional Meat Procurement Specifications (IMPS) required for their procurement.

a. Portion cut grill steaks, formed and unformed. Grill steaks consist of slices of meat obtained from such tender whole cuts as the ribeye, tenderloin, top sirloin butt, and the loin strip. Some of the specifications governing procurement of these meats are that they:

(1) Each steak shall retain the identity of the beef cut from which it was obtained.

(2) Shall not be butterflied.

(3) Each steak shall be cut at an approximate right angle to the grain of the meat.

(4) Weight - Ribeye, top sirloin butt and loin steaks should weigh between 6 1/2 and 7 1/2 ounces. Tenderloin steaks should weigh between 5 1/2 and 6 1/2 ounces.

(5) Surface fat - Must not exceed 1/2 inch thickness at any point for tenderloin steaks. Must not exceed 3/4 inch thickness at any point for ribeye, top sirloin butt, and loin strip steaks.

(6) Shall be free from foreign material (including, but not restricted to: dirt, sawdust, insects, etc.) or chemical odor.

(7) Shall show no evidence of off condition (including, but not restricted to: meat that is sticky, gassy, rancid, sour, or discolored) freezer burn, or dehydration.

(8) Shall be free of bone, cartilage, blood clots, bruises, semi-attached fat or tag ends, unauthorized tendons, dried tissue, etc.

(9) Shall be free of deep cuts which sever a steak for more than 1/3 of the width of the steak.

(10) Shall not be fractured.

(11) Shall show no evidence of thawing and refreezing.

(12) Be cut so that the thickest area does not exceed the thinnest area by more than 1/2 inch.

b. Portion cut Swiss steaks, formed. Swiss steaks are less tender cuts that require a moist-heat cooking method. These cuts are obtained from the ribeye, shoulder clod, knuckle, top sirloin butt, and bottom sirloin butt. Mechanical tenderizing is not allowed.

c. Oven roasts. These are relatively tender cuts of meat which are cooked by dry-heat methods. These cuts are composed of the knuckle and inside round. The knuckle, inside round, and outside round are procured in weight ranges of 8 to 23 pounds each with the inside round being the largest cut of the lot. Each of the larger cuts that weight over 10 pounds must be divided into two equal parts. The roasts are trimmed to exclude heavy connective tissue and to contain no more than one-half inch of surface fat.

d. Pot roasts. Pot roasts are less tender cuts of meat which are prepared by a moist-heat cooking method to achieve tenderness. These cuts are composed of the chuck roll (blade end), shoulder clod, and the chuck roll (neck end). Much of this connective tissue is cut off in the trimming process by the meatpacker. Each pot roast should consist of one identifiable cut, except that portions of adjacent muscles may be present but should not exceed one-half inch in thickness.

e. Ground beef. Ground beef is obtained from boneless cuts such as the flank, shank, plate, boneless neck, and brisket. Cuts and trimmings generated during processing and excluded from roast and steak components are used also. Strict procurement specifications for this item require that the fat content must not exceed an average to twenty-two percent. Veterinary personnel at major commands perform analysis tests to insure conformance to this requirement. Ground beef is packaged in rectangular or cylindrical units weighing from 5 1/2 to 7 pounds each.

f. Beef patties, preformed. This item is procured in the same manner as ground beef except that it is in the form of round patties. Each patty is three-eighths of an inch thick and weighs approximately 3 ounces.

g. Beef pattie mix (bulk) and beef patties with granular soy concentrated. These items are procured in the same manner as ground beef and beef patties except that 20% granular soy concentrated has been added by the manufacturer.

h. Less frequently used beef cuts. There are occasions when additional delicacies are written into the unit or command menu. Holidays, Marine Corps anniversaries, smorgasbords, or other festive occasions are examples of these special menus. These beef cuts are procured as whole cuts containing one or more muscles and are either fully are partially boned. These cuts add distinction to any meal and are identified as:

(1) Beef rib roast. This is a US Choice cut of beef in a weight of 24 to 38 pounds each that is obtained from heifers or steers. Rib roasts are very tender and juicy. They are roasted and served as standing rib roasts.

(2) Beef round roast (steamship). This cut of beef is procured as the whole leg minus the rump and shank. It is obtained as US Choice grade beef with bone-in from either steer or heifer. Specifications for beef rounds require a weight range of between 40 to 64 pounds each. This cut of beef could be described as a serving line ornament which provides numerous delectable portions of tasty beef.

(3) Beef tenderloin. Beef tenderloins are procured with the stipulation that they be 4 pounds in minimum weight. Beef tenderloins are used to provide personnel with such tender delicacies as bacon wrapped filet mignon and chateaubriand.

## 1-6. DESCRIPTION OF VEAL CUTS

Veal is best defined as immature beef or calves of less than 1 year of age. The color of the best grades of veal is light pink with a firm smooth appearance in texture. Due to its immaturity, veal does not have the heavy fat covering of beef. It also has a relatively mild or slightly bland flavor when cooked which is the reason for its being served with a spicy sauce or gravy. The three types of veal used in the military are procured in the grades of prime, choice, good, and standard. These boneless veal types are identified as:

a. Veal steak, flaked, formed and breaded. Veal procured in cutlet from US Standard grade or higher quality veal and/or calf. The cutlets are made from square-cut chucks, racks, loins, legs, foreshanks, flanks, and breast. These cuts are flaked, mechanically mixed, formed, and sliced into patties 5 1/2 ounces each. They are then coated with batter and breading not to exceed 30% by weight.

b. Boneless veal roast. Boneless veal roast are composed of US Standard grade or higher square cut chuck, neck off; 4 ribs and/or shoulder clod and/or leg, shank off. The roasts are completed encased in nettings.

c. Ground veal. Ground veal consists of US Standard grade or higher veal from any combination of carcasses or cuts and shall not exceed 20% fat. Ground veal is limited in its use in the Marine Corps menu.

## 1-7. HANDLING FROZEN BEEF AND VEAL

The proper handling of frozen meats is of extreme importance. As in cooking meats, specific storage and handling methods are necessary to avoid waste and spoilage. Meats and other food items are frozen by the quick freezing and sharp freezing processes. The quick freeze method is a process that freezes products (-20° F) at a fast rate and forms only small ice crystals which do very little damage to the tissue cells. Sharp freezing is the process of freezing food items at temperatures from -20° to 0° F. The Armed Forces uses the sharp freezing method for economic reasons. Meats and other frozen foods should remain under

constant controlled temperatures until they are to be thawed. Meats that have been thawed should never be refrozen. Thawing meats causes them to lose moisture and if they are refrozen, it will result in a less flavorful and dry product when cooked. They become even less flavorful and drier with each subsequent thawing and refreezing cycle.

a. Storage. Upon receipt, frozen meats should be inspected in insure against improper handling, improper storage temperatures, and other practices which could render the product unfit for human consumption. After a satisfactory inspection, frozen meats should be stored in clean, adequately shelved refrigerators with proper air circulation and a uniform temperature of $0^{\circ}$ F or below. Frozen meats should be stacked compactly on shelves or dunnage with air spaces between each stack of cases or cartons. These meats should be kept under close surveillance at all times. Air circulation is considered adequate when the recommended temperature is maintained within the stacks in the freezer space. Containers from which any part of the meat has been used should be resealed to prevent freezer burn.

b. Thawing. Properly thawing frozen meats which are to be cooked is of prime importance. Frozen meats are preferably thawed by removing them from the shipping container and thawing slowly at refrigerator temperatures ranging from $36^{\circ}$ to $38^{\circ}$ F. Large cuts such as roasts may be spread to allow for proper air circulation to speed up the thawing process. This method of thawing requires from 24 to 48 hours and will yield a better thawed product compared to other methods of faster thawing. An acceptable alternate method for thawing frozen meats when refrigerator space is limited is to thaw the meat at room temperature in its original sealed container for a period of several hours, then remove the top. Care must be taken to prevent the meat from thawing too rapidly. Thawing frozen meats too rapidly will cause an unnecessary seepage of meat juices. These juices are referred to as evaporation losses and contain many of the valuable food nutrients. The loss of these nutrients through improper thawing procedures lowers the quality of the finished meat product.

1-8. SUMMARY

This chapter has introduced you to the various classes of meats used by the Armed Forces. Emphasis was placed on beef and veal items. Inspection and grading procedures along with a sampling of the USDA Institutional Meat Procurement Specifications (IMPS) used in the procurement of these items were discussed. The composition and structure of meats and the identifiable cuts of beef and veal were highlighted. Proper handling procedures for storing and thawing frozen meats concluded this unit of instruction. Chapter 2 will finalize and define other types of meats used in the Marine Corps food service program.

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# MEATS AND MEAT COOKERY

## Lesson 1

## Beef and Veal

STUDY ASSIGNMENT: Information for MCI Students.
Course Introduction.
MCI 33.18a, Meats and Meat Cookery, chap 1.

LESSON OBJECTIVE: Upon successful completion of this lesson you will be able to identify the various classes of beef and veal. You will learn the procedures for inspecting and grading beef and veal cuts, the cuts procured for Armed Forces use, and the composition and structure of beef and veal producing animals. You will also learn the proper handling procedures for storing these meats and thawing methods used in their preparation for cooking.

WRITTEN ASSIGNMENT:

A. Multiple Choice: Select the ONE answer which BEST completes the statement or answers the question. After the corresponding number on the answer sheet, blacken the appropriate box.

Value: 1 point each

1. The most popular meat item that appears on Marine Corps menus is

   a. pork.
   b. lamb.
   c. beef.
   d. veal.

2. Veal is structurally similar to what other meat item?

   a. Beef
   b. Lamb
   c. Mutton
   d. Pork

3. Edible glands and organs of meat animals are known as

   a. boneless cuts.
   b. processed meats.
   c. fabricated meats.
   d. variety meats.

4. Edible portions of meat animals that are combined with other food ingredients are identified

   a. meat food products.
   b. processed meats.
   c. variety meats.
   d. fabricated meats.

5. Fabricated meats are those that have been either fully or partially

   a. cooked.
   b. chilled.
   c. trimmed and canned.
   d. boned and trimmed.

6. All meats procured by the Marine Corps have been fully or partially

   a. chilled.
   b. fortified.
   c. precooked.
   d. fabricated.

7. Meats that have been smoked, cured, canned, or dried are classed as

a. boneless cuts.
b. fabricated meats.
c. processed meats.
d. variety meats.

8. Boneless beef procured for Armed Forces use is obtained from which animals?

a. Steers and heifers
b. Bulls and stags
c. Bulls and steers
d. Stags and heifers

9. Which type of beef cattle produces the best grades of high quality beef at an early age?

a. Bull
b. Steer
c. Stag
d. Cow

10. Veal is procured as boneless cuts and ground components from beef cattle that are what age?

a. Less than 1 year
b. Over 1 year
c. At least 2 years
d. Mature animals of any age

11. Pork is procured for Marine Corps use in the form of

a. variety meats only.
b. boneless and semi-boneless cuts.
c. full carcasses.
d. half carcasses.

12. Lamb cuts are obtained from sheep of either sex which are

a. mature.
b. immature.
c. 15 months old.
d. 18 months old.

13. In what form does the Marine Corps procure rabbit?

a. Cut-up, frozen
b. Cut-up, chilled
c. Whole, frozen
d. Whole, chilled

14. Who inspects meats destined for the Armed Forces to insure against damage, spoilage, and contamination?

a. US Interior Department inspectors
b. US Department of Agriculture inspectors
c. Senior medical officer
d. Duty corpsman

15. To protect the health of Armed Forces personnel meat is subjected to

a. lower prices.
b. more government specifications.
c. detailed inspections.
d. strict contract rules.

16. Meat grading standards were established and put into effect by the

a. Department of Defense.
b. Department of Interior.
c. Department of Agriculture.
d. Veterinary Corps.

17. Specification standards were upgraded during fiscal year 1974 to procure beef cuts for Armed Forces use in the grade of USDA

a. standard.
b. good.
c. choice.
d. prime.

18. The location of the meat muscle, the amount of connective tissue in the meat, and the amount of fat intermingled in the meat muscle are factors which determine the _____ of the meat cut.

a. tenderness
b. size
c. grade
d. age

19. The intermingling of fat within a meat muscle is known as

a. cod fat.
b. rendered fat.
c. connective tissue.
d. marbling.

20. Muscles of suspension contain very little connective tissue and would be classed as _____ cuts.

a. tender
b. less tender
c. fatty
d. non-marbled

21. What effect does the fat covering and intermingled fat cause in a cut of meat during the cooking process?

a. They produce more stock for gravy.
b. They provide juices and tenderness within the meat.
c. They distribute seasoning throughout the meat.
d. They shorten the long meat fibers.

22. Grill steaks are obtained from which cut of meat?

a. Clod
b. Inside round
c. Top sirloin butt
d. Flank

23. The cut of meat that should be cooked by the moist-heat method of cookery is the

a. rib eye steak.
b. sirloin butt.
c. tenderloin.
d. Swiss steak.

24. Which cuts of meat are used for oven roasts?

a. The chuck roll and shoulder clod
b. The inside round and knuckle
c. The neck roll and blade roll
d. The shank and clod

25. Less tender cuts obtained from muscles of locomotion containing heavy connective tissue are cooked by

a. dry-heat.
b. moist-heat.
c. grilling.
d. broiling.

26. Ground beef procured for use by the Armed Forces should contain an average of no more than _____% fat.

a. 8
b. 16
c. 22
d. 30

27. A weight of approximately 3 ounces and a thickness of three-eighths inches are military specifications used for the procurement of

a. Swiss steaks.
b. preformed beef patties.
c. rib eye steaks.
d. sirloin steaks.

28. Which of these cuts would be served as a standing roast?

a. Tenderloin
b. Chuck
c. Top sirloin
d. Rib

29. Which beef cut is procured in weights up to 64 pounds and called a steamship?

a. Round
b. Rib
c. Tenderloin
d. Chuck

30. Filet mignon is a tender steak that is cut from the

a. round.
b. tenderloin.
c. rib.
d. loin strip.

31. Boneless veal cuts are procured in all grades from USDA prime to USDA

a. good.
b. standard.
c. commercial.
d. canner.

32. Breaded veal steak is procured from what grade of veal?

a. A
b. B
c. C
d. Standard

33. The batter and breading on a veal cutlet is not to exceed _____ %.

a. 10
b. 15
c. 30
d. 33

34. Veal is procured for Armed Forces use in the form of _____ cuts and components.

a. two
b. three
c. six
d. seven

35. Boneless veal roast cuts are obtained from the square cut chuck, neck, four ribs, leg, shank off and the

a. shoulder clod.
b. flank.
c. tenderloin.
d. rib.

36. Which meat item appears least on Marine Corps menus?

a. Beef roasts
b. Pork roasts
c. Ground veal
d. Beef patties

37. What effect does freezing meats and other foods by the quick freeze method have on the item?

a. Quick freezing damages the cell tissue.
b. Quick freezing does little damage to the cell tissue.
c. Quick freezing toughens the connective tissue.
d. Quick freezing softens the connective tissue.

38. Why should frozen meats that have been thawed never be refrozen?

a. They shrink excessively.
b. They emit rancid odors.
c. They become extremely juicy and too tender.
d. They become drier and less flavorful.

39. Which is the best temperature for storing frozen meats?

a. 0° F or below
b. 5° F
c. 15° F
d. 20° to 30° F

40. Why should frozen meats be thawed slowly in controlled refrigerated spaces?

a. To prevent damage to the cell tissue
b. To prevent loss of nutrients through evaporation of juices
c. To insure an even loss of juices throughout the meat
d. To allow the connective tissues to soften during the process

41. Thawing frozen boxed meat in a refrigerator at temperatures ranging from 36° to 38° F requires a thawing time of _____ hours.

a. 8 to 12
b. 12 to 20
c. 24 to 48
d. 72

42. An acceptable alternate method for thawing frozen meat is to thaw it

a. in cold water.
b. over slow heat.
c. unwrapped with a fan blowing on it.
d. at room temperature in its container.

Total Points: 42

* * *

Chapter 2

# PORK, LAMB, AND OTHER MEATS

## 2-1. INTRODUCTION

We have established the fact that beef is the most popular and most widely used meat item that appears on the Marine Corps menu. Repetition in the types of meats used is avoided by supplementing beef with other popular types of meats. Broiled steak or fried chicken, as popular as they are, become monotonous if they appear on the menu too frequently. These other types of meats, when added to the menu still present acceptable varied and nutritionally adequate meals to personnel subsisting in the dining facility.

## 2-2. PORK IN THE DINING FACILITY

Pork is one of the other popular meats that appear on the menu quite frequently. Pork is both popular and economical and is placed on the menu in many forms. Pork cuts rank second to beef in usage in the dining facility. Pork and pork products are adaptable to meals served at anytime of the day.

## 2-3. TYPES OF PORK PROCURED

Pork for Armed Forces use is procured as wholesale or primal cuts which are defined as subdivisions of meat producing animal carcasses. A small percentage of pork variety type meats are procured also. These pork cuts and variety meats are obtained from hogs which are slaughtered at an early age, usually 6 to 12 months. Pork ranges in grade classes one, two, three, medium, and cull. The Armed Forces use USDA Selection 2 or better quality pork. Pork flesh is quite tender when properly cooked and can be used for all methods of cookery. The types of pork procured are:

a. Primal or wholesale cuts.

(1) Loins. The loin of pork is considered to be one of the choicest cuts and is procured in three different styles:

(a) Bladeless. This form of loin is procured in weights ranging from 10 to 20 pounds. The bladeless loin is the remaining portion after removal of the bladebone and its related cartilage.

(b) Boneless, string tied. This loin is completely boned and cut in half. The two halves are tied together to form a roast.

(c) Pork chops, boneless sectioned and formed. Boneless slices are made from loins which have been completely boned and trimmed of excess fat. The loins are joined together, frozen, and pressed out into 5-ounce round boneless slices. This item has replaced the old bone-in, sometimes fatty, pork chop. It is the same meat except that the bone and excess fat are removed to present a standard uniform portion of pork chop.

(2) Hams. Hams are primarily used as roasts. They are cuts from the hind leg which are procured in a variety of forms to serve the many demands of food serving facilities. The varied styles of hams are:

(a) Pork hams, frozen. These are whole fresh hams that are completely boned with the skin and shank removed. They range in weight from 8 to 12 pounds and are encased in elasticized net bags.

(b) Cooked, boneless, smoked. These are smoked, boneless, and skinned hams that are procured in the form of a long roll that ranges in weight from 8 to 12 pounds. This ham is extremely versatile in its use.

(c) Canned, whole, either pear-shaped or pullman-shaped. Canned hams are fully cooked boneless hams that are marketed in 11 to 12-pounds pear-shaped cans or pullman cans. They are used in many ways. The pear-shaped cans are used in the same form as boneless smoked hams on most menus. The pullman-shaped ham, because of its square shape when sliced is ideal for use in sandwich preparation. Canned hams require refrigeration as do other perishable meats.

(3) Spareribs. Spareribs are a bony but flavorful whole rib section of a pork side. The best quality ribs are procured in weights no more than 3 pounds each. This cut is made by closely separating the rib bones (which lie on top of the bacon) from the loin and backbone.

(4) Ribs, country style. Country style ribs are actually portions of the loin. The rib end of the loin is used for this cut. The rib bones are severed through their center, and the meat is cut almost completely through. The top section above the cut is laid open to expose a large meaty muscle which can be prepared in numerous ways. They are excellent for barbecues and are sometimes used in place of spareribs.

(5) Bacon. Bacon is the most prominent of the breakfast meats used in the Armed Forces. Bacon is the belly of the hog that is cured and smoked in slab form. It is procured in weights ranging from 8 to 14 pounds and is obtained from the bellies of young hogs at the time of slaughter. Canadian bacon which is pork loin that has been boned, trimmed, pressed together, and smoked is a different class of meat cut altogether and should not be confused with the standard bacon cut. The various bacon types procured are:

(a) Slab. Slab bacon is procured in the whole slab form and sliced to its desired thickness for cooking by the using facility.

(b) Sliced (1-pound package). This type of bacon is sliced and packaged in partial vacuum 1-pound packages. All forms of sliced bacon are procured as ready to cook meats. This type bacon is used primarily in dining facilities subsisting a small number of personnel.

(c) Sliced, bulk shingle packaged. This type of bacon is sliced and layered onto waxed paper in the form of shingles.

(d) Sliced, prefried, canned. This is a type of bacon that is sliced, prefried, and canned. It contains a high content of salt which acts as a preservative since this item is prepared strictly for overseas and afloat use. The canned bacon item is a component of the Armed Forces Standard "B" Ration.

(6) Boston butt. The Boston butt is the upper portion of the shoulder. The lower portion of the shoulder is called the picnic. The picnic is removed from the butt portion and is not used by the Armed Forces. A major portion of the bladebone remains in the Boston butt, but the underlying excess fat is removed. This cut of pork is not cured or smoked and is used in prepared dishes requiring pork for moist-heat use. Boston butts are economical and frequently used in such dishes as chop suey, barbecue, or sweet and sour pork. The Boston butt is suitable for use in either moist-heat or dry-heat methods of cookery.

(7) Tenderloins. As in beef, the tenderloin is the most tender cut of pork. It is a muscle removed from the loin section of the pork side. This muscle is relatively small in size and is procured in a weight range of 1/2 to 1 pound. Scarcely seen in the dining facility, tenderloins are used primarily as a meat sandwich filler when preparing boxed lunches for flight personnel.

(8) Pork, diced, frozen. Frozen pork is procured in diced form and used in lieu of Boston butts which would require the use of personnel to bone and trim them. Diced pork is normally used in recipes cooked by the moist-heat method.

b. Variety meats and meat food products. There are many uses for pork variety meats. They can be used as an alternate main entree regularly on the menu, as an ethnic entree on various occasions, and as seasoning meat for certain foods. These variety meats are:

(1) Pork hocks. Pork hocks are the knee joints of hogs. They are procured as fresh pork and weigh from 1/2 to 1 1/2 pounds each. Hocks are used in dishes such as simmered hocks and sauerkraut or with lentil dishes where the hock provides an excellent seasoning.

(2) Pigs' feet. The front feet are the only hog feet used by the Armed Forces. They are procured in fresh frozen form in weights ranging from 3/4 to 1 1/2 pounds each. Pigs' feet can be prepared by broiling, barbecueing, or simmering.

(3) Chitterlings. Chitterlings, which are sometimes called chitlins, are the large and small intestines of hogs. Extreme care must be taken in their cleaning to remove all the minute food particles and excess fat within them. Chitterlings are used as casing for sausage meats and other forcemeats. They are also used as edible meats which are normally simmered or breaded and fried. The Armed Forces purchases chitterlings of high commercial grades both as raw frozen, precooked frozen, and canned meat items.

## 2-4. COMPOSITION AND FINISH OF PORK

The carcass of a young hog used for pork cuts contains a skin covering that is smooth, soft, flexible, and free of hair and bruises. The bones are soft and red. Some important factors used in grading pork cuts are:

a. Meat muscle. The meat muscle of pork cuts is smooth, firm, fine-grained, and grayish-pink to light-pink. Muscles that are darker in color or red are not accepted because these colors are characteristics of hogs of older ages. The pink meat muscles of younger hogs contain a good proportion of fat intermingled with the lean.

b. Fat. The fat of young hogs is smooth, firm, evenly distributed, and white. Fat that is soft and creamy in color is of a lower grade and is considered undesirable.

## 2-5. LAMB IN THE DINING FACILITY

Lamb is another type of meat that appears on the Marine Corps menu periodically. Lamb cuts are obtained from young sheep that are slaughtered at the age of 5 to 10 months. The Armed Forces procures USDA Choice or better quality lamb that has exterior coverings of smooth, clear, brittle, white fat. The lean muscle is pinkish-red with a texture of fine-grained meat that is velvety in appearance.

## 2-6. TYPES OF LAMB PROCURED

Lamb is procured for use in the Marine Corps in the form of two fabricated cuts:

a. Lamb, leg, oven prepared, boneless. Lamb roasts are obtained from the hind leg that has been completely boned, trimmed, and encased in elasticized netting. The roasts are procured in the grade of US Choice with weight ranges of 4 to 9 pounds per roast.

b. Lamb cutlets, portion cut. Lamb cutlets or steaks are made from primal cuts of USDA Good Grade or better lamb. The lamb meat is flaked, mixed, formed in a casing, frozen and then sliced in 5 ounce portions.

## 2-7. OTHER MEAT CUTS

Variety is often added to the menu by using some of the following meats as the main course or alternate main course meat items:

a. Rabbit. Rabbit is procured as a cut-up, frozen, ready-to-cook meat item. It is obtained as US Grade A meat ranging in weight from 1 1/2 to 3 1/2 pounds each.

b. Beef liver. Liver is the only beef variety meat used by the Marine Corps. It is procured in either whole pieces or portion cut slices. The portion cut slices are more commonly used. Portion cut slices are skinned, formed, cut into 3 1/2 to 4 1/2 ounce portions, and packed in boxes containing 40 to 48 slices per box.

c. Corned beef. Corned beef is a fresh cut of quality beef that is processed in a pickle curing solution. These cuts are completely boneless and trimmed. The cuts of beef selected for this item consists of the brisket, rump butt, spencer roll, sirloin butt, and the knuckle. The weight of these cuts ranges from 1 to 2 pounds each. Cuts such as the round are not used because of their bulk. Cooked corned beef in 6-pound cans is also used by the Marine Corps in such recipe items as corned beef hash and corned beef mulligan.

d. Dried beef. Dried beef is a product that is prepared from beef rounds that have been cured in a mild pickle solution, dried, and very thinly sliced. This type of meat is normally used in creamed beef.

e. Sausage products. Sausage is the name applied to finely chopped meats that are seasoned with spices and preserved by freezing, curing, or smoking. The Armed Forces uses sausage products to a great extent. Sausage products are used in main dishes, salads, box lunches, and quick food, speed, and sandwich lines. Sausage and sausage products range in styles from pork sausage to frankfurters (hot dogs), salami, bologna, knockwurst, pepperoni, and many others. Military specifications require that all sausages, except pork sausage, be procured as cooked meats. Pork sausage is a favorite meat item on the breakfast menu.

## 2-8. HANDLING PORK, LAMB, AND OTHER MEATS

Frozen pork, lamb, and other meats used in Marine Corps dining facilities must be properly stored and handled to prevent unnecessary waste and spoilage. Some prime considerations in their storing and handling should be to:

a. Inspect these meats upon receipt.

b. Provide adequate shelving or dunnage.

c. Arrange and space cases for proper air circulation.

d. Regulate refrigerators to provide a constant uniform temperature of $0^{\circ}$ F or below.

e. Maintain refrigerator spaces in a sanitary state of police.

f. Maintain frequent surveillance of these meats.

g. Insure proper packaging and wrapping of meats.

h. Thaw these meats at recommended refrigerator temperatures of $36^{\circ}$ to $38^{\circ}$ F to prevent evaporation loss of their valuable food nutrients.

i. Thaw only required amounts of meats needed for use within a period of 24 to 48 hours.

j. NEVER refreeze any of these meats once they have been thawed.

The requirements for storing and handling these meats are identical to those for beef and veal, and they should be processed accordingly.

## 2-9. SUMMARY

In this chapter you have seen that several meats other than beef and veal are used in the dining facility. The most popular and economical meat in this group is pork. It is procured in two forms: (1) primal cuts such as hams, loins, spareribs, and bacon, and (2) variety meats and products such as hocks, feet, and chitterlings. Other meats used in the dining facility include the two fabricated cuts of lamb and the less frequently used items such as rabbit, beef liver (the only beef variety meat procured), corned (pickled) beef, dried beef, and sausage products which include pork sausage, hot dogs, salami, etc. In the last paragraph you were given some rules for the proper handling and storage of these meats to prevent spoilage and waste.

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# MEATS AND MEAT COOKERY

## Lesson 2

## Pork, Lamb, and Other Meats

STUDY ASSIGNMENT: MCI 33.18a, Meats and Meat Cookery, chap 2.

LESSON OBJECTIVE: Upon successful completion of this lesson you will be able to identify the various types of meats used in the dining facility other than beef and veal. These include pork, lamb, and other miscellaneous meats and meat products. You will be able to identify their methods of procuring, composition and finish, and uses.

WRITTEN ASSIGNMENT:

A. Multiple Choice: Select the ONE answer which BEST completes the statement or answers the question. After the corresponding number on the answer sheet, blacken the appropriate box.

Value: 1 point each

1. Which meat item ranks second to beef in popularity and use?

   a. Veal
   b. Lamb
   c. Pork
   d. Rabbit

2. In what form is pork procured for Armed Forces use?

   a. Carcass only
   b. Carcass and variety meats
   c. Carcass and primal cuts
   d. Wholesale or primal cuts

3. All methods of cookery can be used for pork because of its

   a. low water content.
   b. abundance of connective tissue.
   c. heavy fat covering.
   d. tender flesh.

4. The choicest cut of pork is considered to be the

   a. loin.
   b. ham.
   c. Boston butt.
   d. spareribs.

5. The cut of pork that remains after removal of the bladebone and its related cartilage is the _____ loin.

   a. boneless, string tied
   b. bladeless
   c. boneless, sliced
   d. tender

6. From which cut of pork are boneless portion cut slices obtained?

   a. Ham
   b. Loin
   c. Jowl
   d. Flank

7. The cuts of pork that are used for roasts are loins and

   a. hams.
   b. Boston butts.
   c. picnics.
   d. tenderloins.

8. Which type of ham is procured in the form of a long roll?

a. Whole fresh
b. Cooked boneless smoked
c. Pear-shaped cans
d. Round cans

9. Why should pear-shaped canned hams be stored under refrigeration?

a. To prevent perishable spoilage
b. To prevent non-perishable spoilage
c. To keep the gelatin moist
d. To keep the gelatin soft

10. Which type of pork is ideally shaped for use in sandwich preparation?

a. Boneless string tied roasts
b. Bladeless roasts
c. Pear-shaped canned hams
d. Pullman-shaped canned hams

11. Spareribs are obtained by separating the rib bones from the loin and

a. tenderloin.
b. backbone.
c. Boston butt.
d. ham.

12. The country style rib is actually a portion of the

a. ham.
b. Boston butt.
c. loin.
d. tenderloin.

13. From which section of the hog is bacon obtained?

a. Jowl
b. Belly
c. Leg
d. Back

14. For what purpose is canned prefried bacon procured?

a. To cut down on the amount of salt in some recipes
b. For the convenience of the cook
c. To conserve limited refrigeration space
d. For "B" ration components

15. The Boston butt is a pork cut obtained from the hog's

a. back.
b. lower shoulder.
c. upper shoulder.
d. hind leg.

16. What is the primary use of pork tenderloins?

a. Moist-heat pork dishes
b. Flight lunches
c. Breakfast menus
d. Mid-rats

17. Pork hocks are cuts obtained from the hog's

a. shoulder.
b. feet.
c. Boston butt.
d. knee joint.

18. Which type of pigs' feet are procured for use by the Armed Forces?

a. Front feet only
b. Hind feet only
c. Front and hind feet
d. Pickled only

19. Chitterlings are used as edible meats and also as

a. a "B" ration component.
b. a salad ingredient.
c. casings for sausage meats.
d. a sausage meat.

20. What are chitterlings?

a. The skin of a hog
b. A membrane which lies just beneath the skin
c. A membrane which covers the hog rounds
d. The large and small intestines of a hog

21. In what styles are chitterlings procured by the Armed Forces?

a. As chilled raw and precooked meats
b. As frozen raw, precooked, and canned meats
c. As frozen breaded and unbreaded meats
d. As chilled breaded and unbreaded meats

22. The texture of the bones of young hogs from which Armed Forces pork cuts are obtained should be

a. hard and [illegible].
b. soft and [illegible].
c. soft and pink.
d. hard and red.

23. The color of the young hog's meat muscle should be a

a. grayish-pink to light pink.
b. light red.
c. deep red.
d. medium red.

24. The meat muscle of pork cuts is composed of meat fibers that are

a. extremely long.
b. extremely short.
c. fine-grained.
d. coarse-grained.

25. Which characteristic is true of hog fat?

a. Hard, brittle, and cream-colored
b. Soft, evenly distributed, and cream-colored
c. Hard, evenly distributed, and white in color
d. Smooth, firm, evenly distributed, and white in color

26. High quality lamb is obtained from animals slaughtered at a maximum age of _____ months.

a. 4
b. 10
c. 18
d. 24

27. Lamb is procured for use in the Marine Corps in the form of _____ fabricated cuts.

a. two
b. three
c. six
d. seven

28. Lamb roasts are cuts of meat obtained from the lamb's

a. neck.
b. shoulder.
c. hind leg.
d. loin.

29. Which type of lamb cut comes from primal cuts of USDA Good Grade or better?

a. Lamb patties
b. Lamb cutlets
c. Leg of lamb
d. Lamb roast

30. How is rabbit procured for use in the Marine Corps?

a. Fresh, whole
b. Frozen, whole
c. Frozen, New York dressed
d. Frozen, ready-to-cook

31. Frozen rabbits should not weigh more than _____ pound(s).

a. 1
b. 3 1/2
c. 4
d. 4 1/2

33.18
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32. Which is the only beef variety meat used by the Marine Corps?

a. Tripe
b. Kidney
c. Liver
d. Tongue

33. What is the process used in producing a cut of corned beef?

a. It is aged for at least 6 months.
b. It is pickle cured.
c. It is dehydrated, then rehydrated.
d. It is trimmed closely of fat and smoked slowly.

34. Which cut of beef would NOT be selected for use as corned beef?

a. Brisket
b. Knuckle
c. Sirloin butt
d. Shoulder clod

35. Corned beef cuts usually range in weights from _____ pounds.

a. 1 to 2
b. 5 to 6
c. 7 to 9
d. 10 to 11

36. What style other than frozen cuts of corned beef are used by the Marine Corps?

a. Frozen slices
b. Frozen, diced
c. Cooked, canned
d. Dehydrated, canned

37. From which cut of beef is dried beef obtained?

a. Shoulder clod
b. Knuckle
c. Loin
d. Round

38. In what form is dried beef procured?

a. Very thin slices
b. Very thick slices
c. Small diced pieces
d. Whole cuts

39. Which form of beef would be the best for use in preparing creamed beef?

a. Sausage
b. Dried beef
c. Corned beef
d. Beef liver

40. All sausage products are procured as cooked meats EXCEPT _____ sausage.

a. pepperoni
b. pork
c. bologna
d. frankfurter

Total Points: 40

* * *

Chapter 3

# FISH AND SHELLFISH

## 3-1. INTRODUCTION

Fish and shellfish, which are often called waterfoods, appear on the menu quite frequently. The age-old policy of serving fish and shellfish solely on Friday is now a thing of the past. When used interchangeably with meat and poultry, fish and shellfish can provide some nutritious and tasty dishes that are also relatively low in calories. There are numerous types and forms of fish and shellfish for many uses in the dining facility, and they should be used regularly. Waterfoods, like meat and poultry, are high in protein content and are also an excellent source for providing the essential minerals and vitamins. The fact that most fish and shellfish products are procured in the frozen state increases their availability for use at any time. Some fish and shellfish items are procured as fresh foods; however, when this is done, they are procured from authorized local vendors whose products are required to meet strict military sanitation procurement specifications. The Regional Medical Activity has the responsibility of establishing these sanitary standards and selecting authorized vendors. Fresh lobster is an example of a fresh waterfood item that can be purchased from an authorized vendor.

## 3-2. CLASSIFICATION OF FISH AND SHELLFISH

Fish and shellfish may be defined as water animals that are used for food. A wide variety of the types and forms of these food fish exist and are divided into two main groups for classification:

a. Fin-fish or vertebrate fish. These are fish that are characterized by a backbone and fins. Some species contain scales over the outer skin. Fin-fish are even further divided into two subgroups, lean fish and fat fish. The degree of fat within a fish usually dictates the method by which it should be cooked. Fat types of fish are cooked by baking or broiling, while lean types of fish are cooked by frying. Lean fish are distinguished from fat fish by their whiter flesh. The flesh of fat fish is relatively darker in color.

b. Shellfish. Shellfish are waterfood animals whose bodies are partially or completely covered by a shell. They are sometimes referred to as invertebrates because they have no backbone. Shellfish are further divided into two distinct classes:

(1) Crustaceans. These are shellfish whose bodies have hard shells over the back portion and over the claws and softer shells for protection of the body and legs. Shrimp and lobster are examples of this class of shellfish.

(2) Mollusks. This is a class of shellfish whose members have two shells of the same size and shape, usually hard, which are ordinarily held tightly closed. Oysters, scallops, and clams are examples of this class of shellfish.

## 3-3. FISH AND SHELLFISH AVAILABLE TO THE MILITARY

There are numerous varieties of fish and shellfish that are available to the dining facility. These waterfood products are used frequently in Marine Corps menus and used especially for many festive occasions. Lobster is an example of a food that is used for special occasions, but which requires special handling. Fresh lobsters are used infrequently due to their high cost and difficulties in their handling and distribution. When fresh lobsters are procured, they are purchased live from local authorized vendors and transported in wooden crates or barrels containing seaweed and ice that resemble their natural habitat. They should be kept alive until they are cooked. When lobster is to be served in most dining facilities, the spiny lobster or lobster tail will be utilized. This in actuality is the sea crawfish whose flesh is similar to that of the Northern Atlantic lobster. The body of the spiny lobster does not contain the two large front claws as does the Northern Atlantic lobster and only the tail is deemed fit as an edible portion. These lobster tails are procured frozen and range in weight from approximately 4 ounces to 1 pound each. Frozen whole lobsters (Northern Atlantic) are also procured for serving in the dining facility. The various types of fish and shellfish that are authorized for use in Marine Corps dining facilities are shown in figure 3-1.

| Fish[1] | Type | Form |
|---|---|---|
| Cod | Frozen | Fillets, skinless and breaded fish portions or sticks. |
| Flounder | Frozen | Fillets, skinless and breaded fish portions or sticks. |
| Haddock | Frozen | Fillets, skin on or skinless and breaded fish portions or sticks. |
| Halibut[2] | Frozen | Steaks, skin on. |
| Mackerel[2] | Frozen | Fillets, skin on or skinless. |
| Perch | Frozen | Fillets, skin on or skinless and breaded fish portions or sticks. |
| Rockfish | Frozen | Fillets, skinless. |
| Salmon | Canned | Pieces. |
| Salmon[2] | Frozen | Steaks. |
| Sardines | Canned | Plain (headless). |
| Tuna | Canned | Chunks or solid pack. |
| Whiting | Frozen | Fillets, skin on or skinless. |
| Shellfish | | |
| Clams | Canned | Minced, packed in natural juices. |
| Clams | Frozen | Shucked. |
| Crawfish | Frozen | Tail (lobster tail). |
| Lobster | Fresh | Whole. |
| Lobster | Frozen | Whole. |
| Oyster (Eastern and Pacific | Frozen | Whole, shucked. |
| Scallops, Sea | Frozen | Shucked. |
| Shrimp | Canned | Whole. |
| | Dehydrated | Whole. |
| | Frozen | Breaded, whole, deveined. |
| | | Breaded, molded, deveined. |
| | Frozen | Whole, peeled. |
| | Frozen | Whole, unpeeled. |

[1] Seasonally and locally available fresh and frozen fish items are also authorized for procurement.
[2] Broiling or baking are the most suitable cooking methods for this species of fish--it should not be fried.

Fig 3-1. Table of authorized fish and shellfish items available to the Marine Corps.

## 3-4. GRADE STAMPS AND INSPECTION OF FISH

The National Marine Fisheries Service, a branch of the US Department of Commerce (USDC), offers a voluntary inspection of all waterfoods. The National Marine Fisheries Service is the agency responsible to provide all in plant inspections of water foods purchased for use in the military. The USDC publishes grade standards and a list of approved plants. In figure 3-2 are a sample of the grade stamps used by USDC.

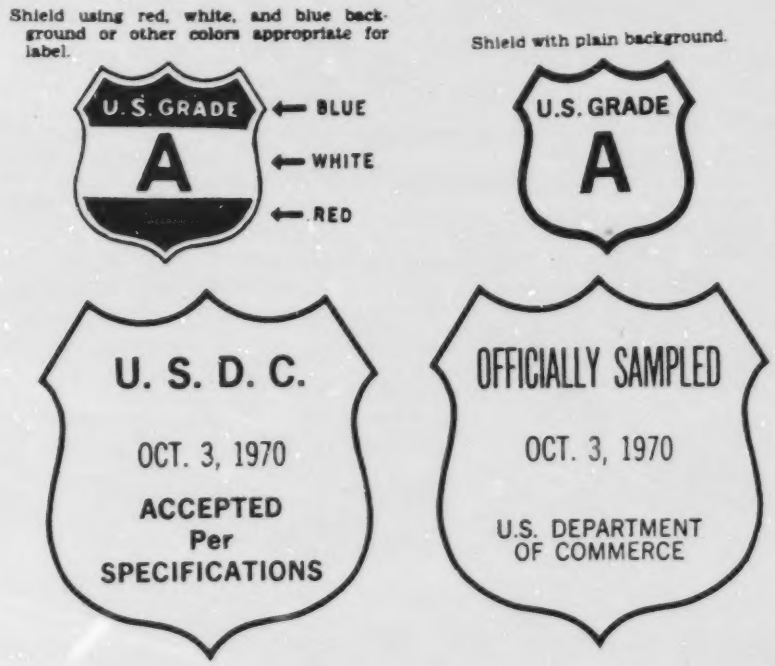


Fig 3-2. USDC grade stamps.

Since fish is the most perishable meat product procured by the Armed Forces, it must meet all the inspection requirements. It must be determined if the fish is fresh, stale, or putrid. The fish take on certain characteristics once they are pulled from the water. The inspector will know and be aware of these conditions. Changes and their effect on various characteristics are shown in figure 3-3 under three classifications. These are noted by the inspectors at the plant location prior to shipment.

| Characteristics | Fresh | Stale | Putrid |
|---|---|---|---|
| Appearance | Bright bloom | Dull-Dry | Dull; dry |
| Odor | Devoid of odor, or odor is characteristic of species | Slight off-odor, depending on degree | Offensive |
| Mouth | Usually closed | Open | Open |
| Eyes | Bright, prominent, clear | Opaque, dull, sunken, red-bordered | Greatly sunken, broken down; devoid of definition or color |
| Gills | Red, free of odor | Reddish-gray, pale yellow, slight odor | Dark brown; offensive |
| Scales | Glisten, firmly adherent | Dull; loose, easily removed | Dry; loose, come off |
| Surface slime | Clear or creamy white; odorless | Devoid of color or dark, viscous; slight odor | Dry or very sticky; offensive odor |
| Flesh | Firm, elastic | Soft, flabby | Withered, flabby |
| Finger impression | Will not remain in flesh | Remains in flesh | Remains in flesh |
| Abdomen (round) | Normal | Distended, bloated | Distended, bloated, or ruptured |
| Vent | Flat-normal | Protruding | Protruding |
| Blood | Bright red; no odor | Dark brown; slight odor | Dirty brown; offensive |
| Held in hand | Firm | Droops in hand | Very limp, sags |
| In water (round) | Should sink | Floats if gas in abdomen | Floats if gas in abdomen |

Fig 3-3. Characteristics of Fish.

## 3-5. TYPES OF FISH AND SHELLFISH MOST COMMONLY USED IN THE DINING FACILITY

The selection of waterfoods which appear on the Marine Corps menu is extensive, although some forms and types appear more frequently than others. This is due primarily to economic control of the food dollar and preferences of personnel subsisting in the dining facility. Some of the most commonly used waterfoods are:

a. Fish

(1) Steaks. Fish steaks are obtained from large fish. Halibut, mackerel, and salmon are used for this purpose. These large fish are cleaned, dressed, and cut into cross-section slices from the back to the belly. This cut of fish is boneless except for a portion of the cross section of backbone. Fish steaks range in weight from approximately 3 to 24 ounces.

(2) Fillets. Fillets are the meaty sides of smaller fish that are cut away from the backbones lengthwise to produce a solid portion of fish flesh. Fillets are usually boneless or semi-boneless and are ready-to-cook upon receipt. The types of fish used for fillets are flounder, cod, haddock, mackerel, rockfish, whiting, and perch. Fish fillets range in weight from a minimum of 1 1/3 ounces to approximately 24 ounces.

(3) Breaded fish portions. These are portions of boneless raw fish that are rectangular in size which have been breaded and frozen. Each portion is an individual serving that ranges in weight from 3 3/4 to 4 1/2 ounces each. This is a popular fish food that is used as a main entree. It is used regularly on hot sandwich serving lines.

(4) Breaded fish sticks. Breaded fish sticks are processed in the same manner as fish portions except that fish sticks are cut into slender 1-ounce sticks which may resemble the shape of your finger in their final form.

b. Shellfish.

(1) Shrimp. These are very popular shellfish items that are procured in various styles. The styles frequently used are:

(a) Breaded shrimp. Breaded shrimp are processed by removing the head, shell, legs, and alimentary canal (sand vein); coating with breading; and freezing individually. Breaded shrimp must number 21 to 35 per pound prior to breading which places them in the grades ranging from medium to large size shrimp. This is one of the most popular shellfish foods served in the dining facility.

(b) Peeled and unpeeled raw shrimp. Raw shrimp is sometimes procured in the shell without being deveined and also as a peeled and deveined item. Raw peeled and deveined shrimp must number 26 to 44 per pound while raw unpeeled shrimp must number 21 to 35 per pound. Raw unbreaded shrimp is commonly called green shrimp.

(c) Dehydrated cooked shrimp. This type of shrimp is peeled, deveined, precooked, freeze dehydrated, and packed in No. 10 size cans and stored with the nonperishables. They number from 26 to 53 shrimp per pound. When these shrimp are reconstituted, their taste or shape will not be affected by the freeze dehydration process, and they should be handled as fresh shrimp. This product was designed for overseas and afloat use, for "B" ration components, and for therapeutic feeding.

(2) Oysters. The procurement of oysters for the military is limited to whole, shucked oysters which are packed in 6-pound containers and frozen. These oysters are harvested, processed, and frozen during peak seasons (September through April) for use throughout the year. The procedure insures the use of high quality oysters during any season. During the summer months of May, June, July, and August oysters spawn or produce eggs for their offspring and are weak, watery, low in quality and do not ship well. This fact nullifies the tales and beliefs that oysters are poisonous or inedible during the months that do not contain the letter "r" (May through August). The larger Pacific oyster (count of 69 and over per 6-pound container) and the smaller Eastern oyster (minimum 212 count per 6-pound container) are both procured for military use.

(3) Scallops. The scallop is a mollusk that propels itself through the water by opening and closing its shell. This is made possible by the action of the adductor muscle. The eye of the large adductor muscle of the sea scallop is the only portion of the scallop used as edible flesh in the United States. The sea scallop is removed from the water and shucked immediately to prevent its drying out and spoiling. The muscle is then trimmed away until only the round eye remains for packing and freezing.

(4) Clams. Clams are numerous in their species, but with this course we will identify only those types procured by the military as described in figure 3-2. These clams are called quahogs which are defined as round, thick-shelled American clams. The surf or skimmer clam is also procured canned in minced form for use in chowders. Although there are many uses for clams, the Marine Corps uses clams primarily as an ingredient for clam chowder.

**ROUND OR QUAHOG (ATLANTIC)**

| App. No. (Shucked) Per 6-lb Gal | Designation | Use |
|---|---|---|
| 68–75 | Chowders | Chowder. |
| 75–94 | Sharps | Frying. |
| 113–150 | Medium | Cocktail. |
| 225–263 | Cherrystones | Cocktail. |

Fig 3-4. Types of clams procured for military use.

## 3-6. HANDLING FROZEN FISH AND SHELLFISH

Fish and shellfish products are very delicate in structure and must be handled properly to maintain their quality and flavor. Some handling procedures for fish and shellfish are:

a. Storage. Frozen fish and shellfish should be stored at temperatures of 0° F or below until they are ready to be used. The storage life of these waterfoods is relatively short and proper storage procedures are of the utmost importance. Once these products have begun to thaw, they should never be refrozen. Waterfood products containing the oldest date of pack stamped on the carton should be used first.

b. Thawing frozen fish. Some cookery methods used for fish permit the fish to be cooked without thawing. Fish steaks and fillets are sometimes cooked in the frozen state when they are to be broiled or baked. When coatings and breadings are to be applied to fillets for frying, the fillets should be allowed to thaw completely before breading. Thawing permits the coating to stick to the fish. Fish that is to be thawed should be thawed under refrigeration at temperatures ranging from 36° to 38° F if possible. Fish should never be thawed under water. The flesh of thawed fish is very tender and should be handled with extreme care.

c. Thawing frozen shellfish. Most shellfish foods can be cooked without thawing. There are a few of these foods that require thawing for specific reasons. Oysters should be thawed completely, but only just prior to cooking. Shellfish such as raw peeled shrimp that is to be breaded and fried require complete thawing before breading. Peeled and deveined green shrimp should be partially thawed to prevent overcooking. Shrimp, like oysters, are particularly sensitive to overcooking which makes them tough and rubbery.

## 3-7. SUMMARY

In this chapter we have covered the classes of fish and shellfish, the types of fish and shellfish available to the military, and the types of these foods that are most commonly used, as well as methods for their proper storage and handling.

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# MEATS AND MEAT COOKERY

## Lesson 3

## Fish and Shellfish

STUDY ASSIGNMENT: MCI 33.18a, Meats and Meat Cookery, chap 3.

LESSON OBJECTIVE: Upon successful completion of this lesson you will be able to identify the classes of fish and shellfish, the types that are available for use, the types most commonly used in the dining facility, and the procedures for proper handling.

WRITTEN ASSIGNMENT:

A. Multiple Choice: Select the ONE answer which BEST completes the statement or answers the question. After the corresponding number on the answer sheet, blacken the appropriate box.

Value: 1 point each

1. Why are fish and shellfish products available to the Marine Corps throughout the year?

   a. They are procured in dehydrated form.
   b. They are procured as frozen products.
   c. They are procured from local vendors.
   d. They are procured from the commissary store.

2. From what source are fresh fish and shellfish foods procured?

   a. The commissary store
   b. Supermarket chains
   c. Authorized local vendors
   d. Defense Supply Agency

3. Who is responsible for inspecting and selecting local vendors from which foods can be procured?

   a. The regional medical activity
   b. The commanding officer
   c. The food service technician
   d. The food service officer

4. The two main groups of food fish are fin-fish and

   a. vertebrate.
   b. skin fish.
   c. mollusks.
   d. shellfish.

5. Fish containing an abundance of fat are usually cooked by

   a. frying.
   b. baking or broiling.
   c. steaming.
   d. stewing.

6. How is lean fish distinguished from fat fish?

   a. It has less bones.
   b. It has thicker flesh.
   c. The flesh is darker.
   d. It has whiter flesh.

7. Which of these water animals would be classified as a shellfish?

a. Perch
b. Flounder
c. Lobster
d. Tuna

8. The two classes of food shellfish are crustaceans and

a. invertebrates.
b. vertebrates.
c. mollusks.
d. quahogs.

9. Which type of shellfish would be classed as crustaceans?

a. Oysters
b. Shrimp
c. Scallops
d. Clams

10. Which class of shellfish is characterized by two shells of the same size and shape?

a. Crustaceans
b. Mollusks
c. Shrimp
d. Lobster

11. Lobster tails are actually the tail portions obtained from the

a. rockfish.
b. whiting.
c. sea crawfish.
d. sea scallop.

12. The sea crawfish is also known as the

a. spiny lobster.
b. North Atlantic lobster.
c. tailfish.
d. prawn.

13. Which type of fish would be most suitable for baking as steaks?

a. Haddock
b. Halibut
c. Flounder
d. Rockfish

14. The shellfish item that may still retain its shell when purchased for military use is the

a. clam.
b. oyster.
c. scallop.
d. shrimp.

15. How are fish steaks produced?

a. By slicing the meaty sides of smaller fish
b. By molding them from fish scraps
c. By cutting cross sections of larger fish
d. By cutting from the belly flesh

16. Fish steaks are boneless except for a small portion of the

a. dorsal fin.
b. backbone.
c. aitchbone.
d. gill.

17. The meaty flesh that is cut away from the sides of smaller fish is called a

a. steak.
b. square.
c. side.
d. fillet.

18. A rectangular cut of fish that is breaded and frozen as an individual 4 1/2 ounce serving is a

a. breaded fish portion.
b. breaded fish stick.
c. fish steak.
d. fish patty.

19. Which type of fish is processed similarly to breaded fish portions?

a. Breaded fish sticks
b. Breaded flounder fillets
c. Breaded perch fillets
d. Fish steaks

20. To meet military specification requirements, breaded shrimp should range in number from_____per pound.

a. 15 or less
b. 16 to 20
c. 21 to 35
d. 43 to 65

21. Breaded shrimp is first processed by removing the alimentary canal, shell, legs, and

a. claws.
b. fins.
c. vertabrae.
d. head.

22. Raw unbreaded shrimp are commonly called _____ shrimp.

a. green
b. red
c. beheaded
d. deveined

23. Raw shrimp that are procured peeled must also be

a. bleached.
b. deveined.
c. enriched.
d. dehydrated.

24. Freeze dehydrated shrimp were designed for use as a/an

a. backup food item.
b. "B" ration component.
c. ingredient in casserole cookery.
d. in-flight meal component.

25. The process of freeze dehydrating shrimp does not affect the quality of the shrimp upon reconstitution if they are

a. reconstituted overnight.
b. reconstituted in hot water.
c. handled as fresh shrimp.
d. cooked immediately.

26. How are freeze dehydrated shrimp packed and stored?

a. In No. 10 size cans and stored with nonperishables
b. In No. .0 size cans and stored with perishables
c. In 2-1/2 pound containers and stored with nonperishables
d. In 2-1/2 pound containers and should be kept frozen

27. Oysters are procured in 6-pound containers and must be

a. precooked.
b. chilled.
c. dehydrated.
d. shucked.

28. High quality oysters are available for use in the dining facility throughout the year because they are harvested and processed during the months of

a. May and June.
b. July and August.
c. June and July.
d. September through April.

29. Why are oysters considered low in quality during the off season?

a. They do not ship well and are weak from spawning.
b. They are considerably smaller during this time.
c. They are extremely poisonous in the off season.
d. They do not cook well during the off season.

30. Although untrue, many people believe that oysters are poisonous during the month of

a. April.
b. July.
c. September.
d. February.

31. The portion of the scallop that is considered to be edible flesh is the

a. front claws.
b. tail.
c. adductor muscle eye.
d. roe.

32. Why are scallops shucked immediately upon removal from the water?

a. The shells take up much needed storage space.
b. They dry out and spoil quickly.
c. The shells are used for re-seeding the beds.
d. Some portions of the meat are re-used as bait.

33. What is the principal use of clams in Marine Corps dining facilities?

a. As the main entree for seafood dinners
b. For hors d'oeuvres
c. As a chowder ingredient
d. For casserole dishes

34. At what temperature should frozen fish and shellfish foods be stored?

a. 0° F
b. 5° F
c. 20° F
d. 32° F

35. Once frozen fish or shellfish products have begun to thaw, what should be done?

a. They should be refrozen immediately.
b. They should be covered with shaved ice.
c. They should be cooked and served.
d. They should be discarded.

36. Fish and shellfish products should be stored and used according to the date

a. received at the subsistence warehouse.
b. requisitioned.
c. received at the dining facility.
d. of pack.

37. Why should fish fillets be completely thawed prior to breading and frying?

a. They will not be cold to the touch.
b. They allow breadings to stick to the fish.
c. They require only a short cooking period.
d. They will not absorb too much breading.

38. Fish that is to be thawed should be thawed under refrigeration at temperatures between _____° F.

a. 33° and 34
b. 36° and 38
c. 40° and 42
d. 44° and 46

39. Which method should NEVER be used to thaw frozen fish?

a. In cases under refrigeration
b. In their individual wrappers under refrigeration
c. In non-refrigerated spaces for a short time
d. Under water

40. Which shellfish item should be partially thawed to prevent overcooking?

a. Breaded shrimp
b. Scallops
c. Peeled and deveined shrimp
d. Breaded oysters

41. The overcooking of shrimp and oysters will result in products that are

a. tough and rubbery.
b. falling apart.
c. overly tender.
d. doubled in size.

Total Points: 41

* * *

Chapter 4

# POULTRY PRODUCTS

## 4-1. INTRODUCTION

Poultry items that are authorized for use by the Marine Corps include chicken, turkey, and duck. Like meats and fish, these foods are excellent sources of high-quality protein. They are procured and used in substantial quantities. Chicken and turkey are the most commonly used poultry products; however, duck is also authorized for procurement but is seldom used. Chicken and turkey meals are favorably accepted by Marine Corps diners and are reasonably competitive with meat entrees on Marine Corps menus. All poultry items procured by the Marine Corps are obtained as frozen products and are of the ready-to-cook (RTC) or boneless cooked styles. Purchasing poultry by this method eliminates the need for man-hours to process foods and eliminates the accumulation of excess waste from trimmed fat and bone.

## 4-2. CLASSIFICATION AND GRADING OF POULTRY PRODUCTS

a. Grading. The United States Department of Agriculture (USDA) is the responsible agency for inspecting, sorting, grading, and classifying poultry for wholesomeness and quality. Three grading codes (USDA grade A, B, and C) are used by the United States Department of Agriculture to indicate that poultry products have been officially graded. Those that are procured for military use are procured in the grade of USDA grade A which signifies that the product is full fleshed, meaty, has a broad full breast, and contains a good layer of fat covering. The lower grades of USDA grade B and C are of lesser quality and yield less meat. These grades are characterized by bruised, torn, or cut skin, poorly fleshed bodies, pinfeathers in the skin, crooked or broken bones, and flesh poorly covered with fat.

b. Classification.

(1) Chicken. Although there are many classes and varieties of chickens, the Marine Corps employs the broiler-fryer as the basic chicken in Marine Corps menus. Rock cornish hens are available and may be requisitioned if desired, although they are somewhat costly. Hen and fowl are procured in the form of cooked canned chicken, and roasters are procured as a canned dehydrated product. The canned chicken products are procured as "B" ration components for use by FMF units overseas.

(a) Broiler-fryers. Broiler-fryers are chickens of a young age, usually under 13 weeks of age and of either sex. Their meat is tender with smooth skin and their breastbone cartilage is soft and pliable.

(b) Rock cornish game hens. Although these chickens are called hens, they may be of either sex. They are immature chickens that are usually from 5 to 7 weeks of age and yield a tender and moist product when properly cooked.

(2) Turkey. In the past turkeys have been the symbol of holidays such as Thanksgiving Day and Christmas Day. Presently, menu makers strive to enhance their dining institutions through the frequent use of many of these acceptable types of foods such as turkey. The classes of turkey that are in use are:

(a) Young hens. Young hen turkeys are tender meated young female turkeys usually under 8 months of age. Their skin is soft and smooth textured with a flexible breastbone cartilage.

(b) Yearling hens. Yearling hen turkeys are female turkeys that are fully matured but which are usually under 15 months of age. Their tenderness is slightly less than young hens and their skin is less pliable and soft as in young hen turkeys.

(c) Young toms. Young tom turkeys are young male turkeys with tender meat, flexible breastbone cartilages, and soft smooth textured skin. They are usually under 8 months of age.

(3) Duck. Duck is not particularly suitable for use in the Marine Corps dining facility due to its high cost and the low yield of edible portions from the finished product. The fat content of ducks is extremely high and cooking instructions must be followed thoroughly to obtain a palatable finished product. Roaster ducklings are the type used by the Marine Corps. These are young ducks of either sex, usually under 16 weeks of age. They have tender meat, bills that are not completely hardened, and their windpipes are still soft enough to allow them to be dented easily. The duck bill and windpipe are checked in determining the age of the duck.

4-3. STYLES OF POULTRY PROCURED

All frozen poultry products are procured as cooked or ready-to-cook poultry items. These items are completely cleaned and individually wrapped. The cleaning process is done by evisceration which is the removal of all internal organs. When whole poultry items are procured, the usable eviscerated parts such as the liver, gizzard, and heart are bagged and stored with the neck in the cleaned cavity of the poultry item. Eviscerated poultry is the only type procured by the Armed Forces. The various styles of poultry items procured for Marine Corps use are:

a. Chicken. Chicken is procured and used in the form of frozen whole chickens and frozen cut-up chickens. Characteristics of these two forms of chicken are:

(1) Whole, frozen, ready-to-cook (RTC). These are broiler-fryers that weigh approximately 2 to 2 3/4 pounds each. These chickens contain the giblets which are bagged and stored in the breast cavity.

(2) Cut-up, frozen, ready-to-cook (RTC). Cut-up chickens are broiler-fryers that are cut in a fashion to leave only the most desirable meat portions. These are the breast, wing, thigh, and leg. This style of chicken is obtained from 2 1/2 to 3 1/4 pound broiler-fryers that have the backs, necks, and giblets omitted from the packs. This means that the price of this item pays for edible portions without any waste. This poultry item is the one most commonly used by the Marine Corps.

b. Turkey. Turkeys are procured in various forms and styles for many uses. The styles procured are:

(1) Whole, frozen, ready-to-cook (RTC). Frozen whole ready-to-cook turkeys are classed as either young hens, yearling hens, or young toms. They are whole eviscerated turkeys with the giblets and neck stored in the neck and breast cavities of the carcass. Young hens and yearling hens are procured at minimum weights of 12 pounds and young toms are procured at weights ranging from 16 to 24 pounds each.

(2) Boneless, raw, molded or tied. Boneless raw turkey is the boned edible meat of high grade turkeys that is compressed and encased in elasticized net bags. They are completely boneless and ready-to-cook. The Armed Forces Recipe Service contains instructions for preparing this item. The compressed roll of turkey contains both light and dark portions of meat. Advantages of using this type of turkey is that there is no waste, less storage space is required, and less oven space is required for cooking.

(3) Boneless, cooked. Boneless, cooked turkey is processed identically to boneless, raw turkey rolls except that this item is fully seasoned and completely cooked. Preparation instructions for heating this item are contained in the Armed Forces Recipe Service.

c. Duck. There is only one style used in the procurement of duck. Roaster ducklings are procured whole, frozen, and ready-to-cook. As in procuring other types of poultry items, ducks are procured in USDA grade A with weights ranging from 3 to 5 pounds each. Cooking instructions for the preparation of duck are also contained in the Armed Forces Recipe Service.

## 4-4. STORAGE AND HANDLING OF FROZEN POULTRY

Frozen poultry should be stored and handled with extreme care to retain its natural qualities and palatable appearance.

a. Temperature. Frozen poultry should be completely wrapped in its original case, properly stacked, and stored in refrigerated spaces with a constant uniform temperature of 0° F or lower. Proper air circulation with unobstructed passage will help to maintain the desired storage temperature. Temperatures that fluctuate will hasten the moisture loss in poultry. Poultry that is unwrapped or improperly wrapped and stored is extremely vulnerable to dehydration or freezer burn. Freezer burn is a condition that occurs in poultry when it is exposed to air in the refrigerator compartment. It appears as a round, light tan, or dark brown patch that originates from a feather follicle and spreads to other similar areas as the skin loses moisture. This is not a bacterial defect, but is simply a dryness of the surface caused by the evaporation of moisture from the surface which produces a bland or tasteless poultry or meat product when cooked. Poultry that has been freezer burned is safe to eat; however, its quality will be affected by this condition.

b. Thawing. Frozen poultry should be thawed while under refrigeration at temperatures ranging from 36° to 38° F. Most whole poultry items are individually wrapped or bagged in either paper or plastic materials to protect the meat. These wrapping materials should remain on the poultry item until the thawing process is completed, even though the poultry can be removed from the shipping cases and spread out in the refrigerator on shelves to hasten thawing. Whole chickens require 18 to 24 hours to thaw and large turkeys require 24 to 48 hours to thaw by this method. Cut-up chickens should be thawed in their intermediate cartons to protect the surface of the chicken while it is thawing. Poultry should NOT be thawed under water and should NEVER be refrozen once it has been thawed. These procedures affect the quality of the poultry. Use the thawed poultry as soon as possible. The maximum holding period for thawed poultry even while under refrigeration is 24 hours. Excessive holding periods for these items increase the risk of spoilage because the wet or moist surfaces of the meat or poultry are ideal breeding areas for bacteria.

c. Cleaning. Although poultry is procured as a ready-to-cook food, it must still be inspected. Whole poultry items, such as chicken, duck, and turkey, should be completely thawed and the neck and giblet bag removed from the body cavity. A thorough inspection of the entire body is then made in order to detect the presence of pinfeathers, any spongy red lung tissue inside the cavity area, loose membranes, or skin defects. Should you find any of these defects present, they should be removed. The poultry and the contents that were removed from the breast cavity should then be thoroughly washed and rinsed under cold running water and drained.

## 4-5. CHARACTERISTIC DEFECTS FOUND IN POULTRY PRODUCTS

Quality in poultry may be affected by several factors not associated directly with the grade of the bird. These are freezer burn, bone darkening, and flesh pinkness. The cause and effect of freezer burn occurs during transit or storage and has been discussed. Bone darkening and flesh pinkness are defects that are observed after the poultry has been cooked. Food service personnel should become familiar with the cause and effect of these defects and learn to recognize them.

a. Bone darkening. Certain bones of thawed frozen chicken or turkey are often observed to be dark in appearance. The darkness extends into the meat muscle surrounding the bone, and it is much more pronounced when cooked. The most pronounced darkness is found in the wing, thigh, and leg bones. The darkening of the flesh is often mistaken for lack of doneness in cooking, or thought to be bacterial spoilage. Neither of these is true, however. Bone darkening does not affect the eating quality of the birds. Aroma, flavor, and texture are not changed. Appearance, of course is affected. Poultry scientists explain that this condition occurs primarily in young broiler-fryers or birds of approximately 9 weeks of age whose bone structures are not hardened. The process of freezing and thawing these young birds breaks down the blood cells of the bone marrow and causes a deep red pigment to seep out. After the poultry is cooked, the red seepage of pigmentation has turned to a dark brown color.

b. Flesh pinkness. All poultry should be cooked until it is well-done. The desired degree of doneness is normally judged by the brownness of the skin and the movement of the thigh joint, however, the best method to determine the degree of internal doneness is to insert a thermometer into the thigh of the poultry product. There are times, however, when accurate testing shows that the poultry has finished cooking to the desired degree of doneness, but when it is cut, there is a pinkish color, even if the poultry is well-done. This does not indicate that the chicken or turkey is spoiled. This pink coloration of the meat is caused by various

gaseous substances in the atmosphere of the oven or on top of the range which are present during the cooking process. These substances react with the meat to turn it pink. This reaction does not produce undesirable qualities in the meat.

## 4-6. SUMMARY

This chapter has covered the classification and grading of poultry items, the styles of poultry procured, and the procedures for the proper storage and handling of poultry items. The characteristic defects that affect poultry items were also covered with explanations which will enable food service personnel to recognize them and identify their causes and effects.

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# MEATS AND MEAT COOKERY

## Lesson 4

## Poultry Products

STUDY ASSIGNMENT: MCI 33.18a, Meats and Meat Cookery, chap 4.

LESSON OBJECTIVE: Upon successful completion of this lesson, you will be able to identify the classes of poultry products, the procedure for grading them, and the styles that are procured and used in Marine Corps dining facilities. You will be able to identify the procedures for storing and handling poultry and the causes of the characteristic defects found in poultry.

WRITTEN ASSIGNMENT:

A. Multiple Choice: Select the ONE answer which BEST completes the statement or answers the question. After the corresponding number on the answer sheet, blacken the appropriate box.

Value: 1 point each

1. Which groups of poultry items are authorized for Marine Corps use?

   a. Chickens, turkeys, and geese
   b. Chickens, turkeys, and squabs
   c. Chickens, turkeys, and ducks
   d. Chickens and turkeys only

2. Like meats and fish, poultry is a good source for obtaining high-quality

   a. protein.
   b. carbohydrates.
   c. vitamin C.
   d. ascorbic acid.

3. In what style is frozen poultry procured by the Marine Corps?

   a. New York dressed
   b. Drawn
   c. Ready-to-cook
   d. Completely sterilized

4. Which agency is responsible for inspecting, sorting, grading, and classifying poultry?

   a. National Livestock Association
   b. National Poultry Association
   c. Department of Defense
   d. United States Department of Agriculture

5. Meaty, full fleshed, broad breast, and a good layer of fat covering are characteristics of a chicken that has been graded USDA grade

   a. A.
   b. B.
   c. C.
   d. D.

6. Why are rock cornish hens seldom procured and used in the dining facility?

   a. The cooking process is quite tedious.
   b. They are costly.
   c. They are not too acceptable.
   d. They are too large.

7. The basic poultry product in the Marine Corps menu is the

   a. young tom turkey.
   b. roaster chicken.
   c. rock cornish game hen.
   d. broiler-fryer chicken.

8. Broiler-fryer chickens are defined as those that are

a. young with soft breastbone cartilages.
b. young with hard breastbone cartilages.
c. older females with slightly soft breastbone cartilages.
d. older males with slightly soft breastbone cartilages.

9. Rock cornish game hens are chickens that are

a. females 10 months of age.
b. unsexed and immature.
c. surgically unsexed at 8 months of age.
d. mature males.

10. Which type of turkey is NOT procured for use by the Marine Corps?

a. Young hens
b. Young toms
c. Yearling hens
d. Yearling toms

11. The turkey that has the LEAST pliable skin and tenderness of meat is the

a. fryer-roaster.
b. young hen.
c. young tom.
d. yearling hen.

12. Duck is NOT suitable for everyday use in Marine Corps dining facilities because of its high cost and

a. tough meat.
b. low yield of edible meat.
c. extensive cooking period.
d. its non-palatable appearance.

13. One disadvantage of serving duck is that it contains an extremely large amount of

a. white meat.
b. skin.
c. fat.
d. cholesterol.

14. Which areas of the duck are used to determine its age?

a. The legs and feet
b. The breastbone and neck
c. The bill and windpipe
d. The rear of the head and neck

15. How are whole turkeys and chickens prepared for shipment after they have been cleaned?

a. They are covered with shaved ice.
b. They are chilled and wrapped in burlap.
c. They are packed in cases and frozen in bulk form.
d. They are individually wrapped and frozen.

16. What process is used by packers to clean poultry procured for Marine Corps use?

a. Drawing
b. Hand drawing
c. Evisceration
d. New York dress

17. Upon opening a case of whole chickens or turkeys, where would you find the giblets?

a. In the body cavities
b. In the bottom of the case
c. Layered on top of the poultry
d. In a bag that is stapled to the top of the box

18. Which parts of the chicken are found in the giblet bag?

a. Neck and feet
b. Head, feet, and liver
c. Gizzard, liver, and roe
d. Heart, liver, and gizzard

19. The two forms of chicken procured for use in Marine Corps dining facilities are

a. frozen whole and frozen cut-up.
b. chilled whole and chilled cut-up.
c. precooked whole and precooked cut-up.
d. cut-up pieces and boned breasts.

20. The weight range for broiler-fryer chickens is _____ pounds each.

a. 1 1/4 to 1 3/4
b. 2 1/2 to 3 1/4
c. 2 3/4 to 3 1/2
d. 3 1/2 to 4 1/2

21. Why does the Marine Corps purchase chickens that are already cut-up?

a. To expend the food dollar
b. To procure them in cases of less bulk
c. To procure the greatest yield of edible meat
d. To procure chickens in a variety of styles

22. The giblets and neck from turkeys are stored in

a. the bottom of the case.
b. a separate box.
c. the neck cavity.
d. the neck and breast cavities.

23. Raw, molded turkeys are compressed, encased in elasticized bags, and

a. sliced.
b. completely boned.
c. partially boned.
d. partially cooked.

24. Which type of turkey is most advantageous to use when storage and oven space is limited and a minimum amount of waste is desired?

a. Boneless, raw, molded
b. Frozen, whole, young hens
c. Frozen, whole yearling hens
d. Frozen, whole young toms

25. Instructions for preparing boneless, cooked turkey are contained in the

a. Armed Forces Recipe Service.
b. Navy Cookbook.
c. Marine Corps Manual.
d. Navy-Marine Corps Recipe Service.

26. When procured, the Marine Corps purchases ducks in the form of

a. whole, roaster ducklings.
b. whole, mature ducks.
c. cut-up broiler-fryer ducklings.
d. cut-up mature ducks.

27. What is the maximum temperature allowable for spaces where frozen poultry is stored?

a. 0° F
b. 10° F
c. 20° F
d. 30° F

28. What affect do fluctuating temperatures have on stored frozen poultry?

a. It causes the finished product to be overly tender.
b. Excess shrinkage will occur while cooking.
c. The outer surface will show signs of mold.
d. It hastens the loss of moisture.

29. A dehydrated patch that forms on the surface of improperly stored poultry is called

a. dry patch.
b. dry spot.
c. freezer burn.
d. rehydration.

30. What causes dehydration in poultry while in storage?

a. Bacterial defects
b. Improper wrapping
c. Too cold temperatures
d. Too warm temperatures

31. The proper method for thawing frozen poultry is to thaw it under refrigeration at temperatures ranging from

a. 26° to 29° F.
b. 36° to 38° F.
c. 39° to 42° F.
d. 44° to 46° F.

32. Whole chickens being thawed under refrigeration at the proper temperature will thaw in approximately _____ hours.

a. 8
b. 14
c. 24
d. 36

33. How should cut-up chickens be thawed?

a. In a steam kettle of cold water
b. Spread out on a worktable in the galley
c. On a worktable with a fan blowing on it
d. Under refrigeration in their intermediate cartons

34. How should poultry be handled once it has been thawed and not needed for the present meal?

a. Refrigerate, then cook and serve within 24 hours
b. Wash in a vinegar solution and refrigerate
c. Cover with ice and refrigerate
d. Refreeze immediately

35. Even though thawed poultry is under refrigeration, why should it be used as soon as possible?

a. Thawed poultry spoils rapidly.
b. It is more vulnerable to freezer burn.
c. Its bulk takes up valuable refrigerator space.
d. Prolonged holding causes bone darkening.

36. When poultry is completely thawed, the next step is to

a. season it well.
b. pan it.
c. baste it.
d. inspect it.

37. How should poultry be washed?

a. In soap and water
b. In vinegar and water
c. In lukewarm water
d. Under cold running water

38. Bone darkening and flesh pinkness are observed in poultry when it is

a. slaughtered.
b. 5 weeks of age.
c. in the frozen state
d. cooked.

39. Which quality of poultry is affected by the darkening of its bones?

a. Appearance
b. Aroma
c. Flavor
d. Taste

40. In which class of poultry does bone darkening primarily occur?

a. Roasters
b. Broilers or fryers
c. Yearling tom turkeys
d. Mature turkeys

41. Poultry that shows signs of bone darkening should be

a. considered perfectly normal.
b. refrozen until the bones lighten.
c. used in salad preparation only.
d. sliced by machine.

42. The best method for determining the degree of internal doneness of poultry is to

a. cut a slice of breast meat that is closest to the bone.
b. stick a meat fork into the thigh.
c. insert a meat thermometer into the thigh.
d. judge from the degree of brownness of the skin.

43. Poultry is considered to be properly cooked when it is cooked to the stage of being

a. medium rare.
b. medium.
c. medium well-done.
d. well-done.

44. The flesh of a properly cooked and well-done poultry item may sometimes appear _____ in color.

a. green
b. pink
c. deep red
d. gray

45. What causes the meat of poultry to turn a pinkish color when it is cooked?

a. The mixing of the meat and atmospheric gaseous substances
b. Prolonged thawing periods which breaks down the connective tissues
c. Prolonged storage periods which breaks down the blood cells
d. A bacterial reaction which causes spoilage when heat is applied

Total Points: 45

* * *

Chapter 5

# PRINCIPLES FOR COOKING MEATS, POULTRY, FISH, AND SHELLFISH

## 5-1. INTRODUCTION

Meats, poultry, fish, and shellfish are the leading foods that appear on your menu. Their importance is greatly enhanced when proper cooking and serving techniques are applied to retain their nutritional values. Knowledge of these foods, experience in applying cookery methods, and extensive use of the Armed Forces Recipe Service are factors which contribute to the palatability and attractiveness of these dishes to be displayed and served.

## 5-2. COOKING THAWED AND FROZEN MEATS, POULTRY, FISH, AND SHELLFISH

Most meat, poultry, fish, and shellfish are received frozen in the dining facility.

a. Meats. Frozen meats and meats that have been thawed from the frozen state are prepared exactly as chilled meats, although longer cooking times should be allowed for meats that are cooked in the frozen state. The principle of using low temperatures for cooking is equally applicable to all meats.

(1) Roasts. Roasts which are to be cooked in the frozen state will require one hour or more additional cooking time. Seasoning with salt and pepper should be delayed to allow the exterior of the roast to sufficiently moisten itself to retain them. The insertion of the meat thermometer should be delayed until the roast is partially thawed.

(2) Ground and diced meats. These meats should be completely thawed prior to cooking. This permits ground beef to be easily mixed with other ingredients for such dishes as meat loaf or meat balls and allows diced beef for stews or other recipes to brown properly prior to cooking. Frozen preformed ground patties may be grilled in the frozen state.

(3) Steaks and chops. All steaks and chops may be grilled in the frozen state EXCEPT PORK. All cuts of pork should be thawed completely to insure cooking to the well-done stage.

(4) Liver. Liver is cooked either by deep-fat frying, grilling, or a combination of grilling and baking. When cooked from the frozen state its shape and moisture is retained, thereby presenting a more palatable and attractive serving. Should liver turn a greenish color after grilling, do not regard it as being spoiled. It merely discolors from oxidation of its pigment resulting from exposure to air, and it is still edible.

b. Poultry. Poultry is cooked by dry heat, moist heat, and frying. All poultry should be thawed completely and cooked to the well-done stage. Large poultry items and whole chickens are roasted or baked by allowing a certain number of minutes per pound to cook.

c. Fish and shellfish. Fish and shellfish foods should be cooked well-done, although overcooking should be avoided. Fish and shellfish are cooked from both the frozen and thawed state and should be handled carefully because of their delicate and tender flesh.

## 5-3. METHODS USED FOR COOKING

There are two basic methods used for cooking meats, poultry, fish, and shellfish. These are dry heat and moist heat. Meats in particular are classified into two categories when determining the method by which they are to be cooked. These categories are the tender cuts and the less tender cuts. Less tender cuts of meats are locomotive muscles that contain an abundance of connective tissue which must be broken down for tenderness during the cooking process by the addition of a liquid. Tender cuts of meat contain a small amount of connective tissue reducing the need for any additional moisture. Poultry, on the other hand, is usually cooked by the method determined by the age of the bird. Younger birds are cooked by the dry-heat method and older birds are cooked by the moist-heat method. The flesh and bones of poultry toughen and harden as the bird gets older. Fish is usually baked, broiled, or deep fat fried according to its fat content, while shellfish foods are broiled, fried, or simmered. Normally, the only shellfish foods used in the Marine Corps that are cooked by the moist-heat method are clams which are used in chowders and green shrimp which are used in cocktails or salads.

a. Dry-heat methods. Dry-heat cooking is a method of cooking with heat without the addition of water or liquid.

(1) Roasting or baking. This is a method of cookery that is done by dry-heat in a closed place (usually in an oven) using tender cuts of beef, veal, lamb, or pork. When applied to meats, the word baked is sometimes used synonymously with roast. Baking is a method of producing finished cakes, cookies, breads, or pies.

(2) Broiling. Broiling is a dry-heat method by which heat is applied directly to the meat either by placing it under a gas flame or under an electric heating unit with grid pans that are adjustable to attain the desired distance from the heat. Broiling is also accomplished by exposing meats over hot coals such as charcoal broiling.

(3) Grilling. Grilling is a form of broiling in which the meat is placed on a heated, lightly greased griddle. Excess fat is scraped or drained off the griddle as it accumulates.

(4) Frying. Deep-fat frying, which is also referred to as French frying, is a method of cooking tender cuts of meat, poultry, fish, and shellfish by completely immersing them in hot fat. Usually meats, poultry, fish, and shellfish that have been breaded or have been batter-dipped are cooked in this manner. Roasting in greased pans is often referred to as oven-frying.

b. Moist-heat methods. Moist-heat cookery is a method of cooking less tender cuts of meat. Moist-heat is simply a method of cooking by heat with a specified amount of liquid added.

(1) Braising. Braising is a method of cooking which involves browning meat in its own fat either in the oven or in a steam-jacketed kettle, adding a small amount of liquid, covering tightly, and simmering slowly until the meat is tenderized by softening the connective tissue. Diced beef used in stews, in potpies, or for braised beef cubes are good examples of this type of cookery.

(2) Simmering. This is a method used to cook meats in a liquid at a temperature below the boiling point, usually between 185° and 200° F, where the bubbles form slowly and break below the surface of the liquid. Care should be taken when cooking by this method to avoid letting the temperature rise to 212° F. A temperature of 212° F is no longer in the simmering stage; it is boiling and will result in a finished product that is improperly cooked. Meats that are boiled for long periods of time result in dissolved connective tissue which causes the meat fibers to separate. They become dry, stringy, tough, and make proper carving of large cuts impossible.

## 5-4. COOKING BEEF, VEAL, PORK, LAMB, AND OTHER MEATS

Meats are cooked to increase palatability by improving their flavor and appearance through the cooking process and to tenderize them for ease in digestion. Palatability in meats is shown by finished products that are uniformly cooked, have retained generous amounts of their juices, are eye appealing, and have not had excess shrinkage.

a. Dry-heat methods. These are methods used for cooking tender cuts of meats and some specific types of meats.

(1) Roasting or baking. Roasting is primarily applied to large cuts of meat usually ranging in size from 6 to 8 pounds each and requires approximately 2 to 4 hours of cooking time. Baking is more generally applied to cooking breads, cakes, cookies, and cheese and egg dishes, but sometimes the term is applied to meat cookery. Ham is usually referred to as being baked. The proper temperature for roasting meats in the oven is 325° F. The oven should be preheated to this temperature while the meat is being prepared for cooking. Roasting pans should have low sides to allow the hot air to circulate freely around the meat in them. If stainless steel racks are available, they should be placed in the bottom of the pans to prevent the meat from cooking in its own drippings. The roasts should be rubbed with salt and pepper and placed on the racks leaving space between each for the hot air to circulate.

Seasonings should be used as the recipe and product sheets direct. Salt primarily flavors the outside of the meat penetrating only to about one-half inch depth of the roast. Too much salt retards browning of the roasts. DO NOT add water to the pans and DO NOT cover the pans. All roasts should be placed in pans with the fat side up. This provides a self-basting process for the roast which eliminates the need for meat drippings to be spooned back over the roasts. Insert a meat thermometer into the center of the thickest part of the main muscle away from any bone or fat pocket and place the panned roasts in the oven. Cook the roasts to the desired degree of doneness as shown on the recipe card. Upon completion of the roasting process, remove the roasts from the oven and let them stand in a warm place for 20 minutes prior to slicing. Meats continue to cook during this period even though removed from heat. The standing period also allows the gelatin-like meat proteins to congeal or stiffen which makes carving much easier. Larger roasts such as standing ribs or steamship rounds are roasted at lower temperatures usually (300 $^{O}$ F), and the cooking time is extended to approximately 8 hours. Any tender cut roast from beef, veal, lamb, or pork can be cooked by this method.

(2) Broiling. Gas flame or electric heating unit broiling is a cookery method that is seldom used in the Marine Corps because few dining facilities are equipped with this equipment. Broiling steaks and ground beef patties over charcoal is a familiar cookery method with food service personnel and is principally the same as overhead broiling except the concentrated heat is beneath the meat. Meats to be broiled should be cut or molded into slices or patties to a thickness of 3/4 of an inch or thicker. The broiler should be hot when the meat is placed inside and the grid pan should be adjusted to the desired level to insure cooking to a specific degree of doneness. When the first side is browned, it is considered to be half-done and should be turned to allow the second side to brown. Avoid piercing the flesh when turning the meat as this causes the juices to escape. The fork should be inserted into the fat and turned or food tongs should be used. When the second side is browned, remove the meat from the broiler, season it, and serve immediately. Salt has a tendency to retard browning and also extracts juices from the meat. For this reason, it is best to salt the meat after it is browned. Steaks, chops, and meat patties are ideal meats for broiling.

(3) Grilling. The grilling method of cooking meats is applied to meats such as steaks, chops, veal slices, ground meat patties, lamb chops, liver, sausage patties and links, and cured ham or bacon slices. Fresh pork can be grilled; however, additional cooking time is required to insure complete doneness. The griddle should be preheated and lightly greased. Steaks and chops should be trimmed, leaving no more than 1/4 inch thickness of outside fat. Cut through the outside fat and membrane in several places with a knife to prevent the meat from curling around the edges. This permits the meat to lie flat on the grill for uniform cooking. Cook the meat on one side until it is browned or for a specified time shown on the recipe card. Turn the meat by inserting a meat fork into the fat edge of the meat or by using food tongs or a turner. Always turn meat away from you to avoid being splashed by hot fat. Surplus fat should be drained from the grill as it accumulates. After the meat is cooked to its desired degree of doneness, season it with salt and pepper. Remember to season ONLY the browned side of grilled meats. Scrape the griddle clean of any excess fat and burned residue prior to refilling the griddle for the next batch. Most grilled meats are best when served directly from the grill.

(4) Frying. The frying method of cookery in the Marine Corps is commonly referred to as deep-fat frying or French frying. Most deep-fat fried meats are coated with flour or breading to seal in the juices. This type of cookery is limited to some extent when meats are used. Very few meats are completely cooked by this method. Most meats cooked in the fryer are cooked further in the oven for tenderness and complete doneness. French fried liver is an exception. Fryer kettles should be filled with clean fat and preheated to the proper temperature by setting the thermostat control. Meats should be uniformly cut and free of any moisture or excess breading. Fill the fryer baskets half-full or one layer deep and slowly lower them into the hot fat. Maintain the proper temperature throughout the cooking period to prevent a breakdown of the fat. Keep meats separated to allow even cooking and cook as specified by the Armed Forces

Recipe Service and the product sheet. When done, remove the meat from the fat, drain thoroughly, and serve immediately if done or prepare for further cooking in the oven. Fried meats should be cooked in small batches as needed. Avoid excessive cooking in fat which will increase the rate of fat absorption by the meat. After removing cooked meat from the fat, skim off any residue remaining from the previous batch and allow the fat to return to the proper temperature before cooking the next batch. A deep fat thermometer should be used to check the temperature of the fat.

b. Moist-heat methods. These are methods of meat cookery that are applied to less tender cuts of meats to attain flavor and tenderness.

(1) Braising. Although generally applied to less tender cuts of meat, braising is also used in the cooking of some tender cuts. To braise a meat, it is first surface browned, a liquid is added, and it is simmered in a tightly covered container until done. The browning may be done in the oven, on a griddle, or by deep-fat frying. The liquid may be water, stock, sauce, juice, or a marinade. Seasoning to impart flavor is added with the liquid. The product is then simmered until done and tender as specified by the Armed Forces Recipe Service and the product sheet. The cover may be lifted after the meat is cooked to allow the liquid to reduce to a sauce or gravy. Pot roasts and stews are examples of meat dishes prepared this way.

(2) Simmering. This is a method of cooking meat in a liquid which is just below the boiling point, at temperatures below 212° F where the bubbles in the liquid form and burst below the surface. In most instances, simmering is employed in conjunction with the braising method of cookery. Meats simmered in the oven are simmered in tightly covered pans at a temperature of 325° F, while meats simmered in a steam-jacketed kettle are cooked at temperatures ranging from approximately 185° to 200° F. The temperature of the steam-jacketed kettle is controlled by adjusting the steam pressure control valve.

## 5-5. COOKING FISH AND SHELLFISH

The Armed Forces Recipe Service provides numerous recipes for the preparation of fish and shellfish dishes for the daily menu. The procedures and methods used in their preparation are relatively easy to follow and produce some delightful dishes. Dry-heat methods are used for cooking fin-fish almost exclusively. Moist heat is less satisfactory for fish because it makes the fish flesh too tender. Moist-heat methods are used more often for cooking shellfish. Certain seasonings, sauces, and garnishes are added or served with fish and shellfish dishes to enhance their natural flavor and add eye appeal. These additions should be used sparingly to blend with the natural flavor and not to disguise or conceal it.

a. Dry-heat methods.

(1) Baking. Fish steaks and fillets are the types of fish that are usually baked; however, fish portions may be cooked by this method also. Fish steaks and fillets are placed skin side down (for ease in turning) in a single layer on greased sheet pans, covered with a mixture of melted butter or margarine and lemon juice, seasoned, and baked in preheated ovens at 375° F for approximately 25 minutes or until brown. Upon removal from the oven, appropriate garnishes such as lemon wedges and parsley can be added, and they should be served immediately. The fish can be tested for doneness by sticking a fork into the thickest part along the outer edges to see if it flakes. Avoid overcooking which will result in a dried-out product. Shellfish are usually not baked. Items such as lobster and sea crawfish can be broiled if the necessary equipment is available.

(2) Grilling. Fish fillets, steaks, and breaded portions can be cooked on a well-greased griddle set at 350° F. The coated fillets and steaks or breaded portions are placed on the griddle, browned on one side, carefully turned to brown on the second side, removed from the griddle, and allowed to drain on absorbent paper. Grilled fish can be appropriately garnished and served immediately. This method of cooking fish is convenient where griddles are located at the serving line.

(3) Frying. Fish and shellfish foods are highly popular when prepared by this method of cookery. Certain fish and shellfish items are procured breaded and ready-to-cook. Breaded shrimp, breaded molded shrimp, and breaded fish portions are examples of this. These products should be cooked from the frozen state and should never be thawed. Fish and shellfish such as fillets, oysters, peeled green shrimp, and scallops should be completely thawed prior to coating with breading materials for cooking. Fryer baskets should be filled with one layer of the item to be cooked and submerged in deep fat at the proper temperature for the time period specified on the Armed Forces Recipe card. Fish portions and fish sticks will rise to the surface when cooked. Caution should be taken not to overcook or overbrown these deep-fat fried foods. Fish will dry out and shellfish will toughen considerably if overcooked. Cooked fish and shellfish should be removed from the fat and allowed to drain well in the fryer basket or on absorbent paper. Garnish them appropriately and serve immediately. A combination of different fish and shellfish are often served together as a seafood platter.

b. Moist-heat method. Simmering is the moist-heat method most commonly applied to shellfish. This method of cooking fish is not used in the Armed Forces Recipe Service except when preparing ingredients for soups or chowders. Lobster is cooked while live by plunging into boiling salted water and cooked for approximately 10 minutes so that the shell turns red. Sea crawfish, frozen lobster, and unbreaded shrimp are most frequently cooked by the simmering method of moist-heat cookery Specific cooking instructions for these shellfish are contained in the Armed Forces Recipe Service.

## 5-6. COOKING POULTRY

The techniques used for cooking poultry are principally the same as that used in cooking meats. Dry-heat and moist-heat cooking methods are employed. The popularity of poultry among Marines aids in the maximum use of poultry foods. These can be prepared in a number of different ways to avoid repetition.

a. Dry-heat methods. Dry-heat methods of cooking are usually applied to certain classes of poultry as described in chapter 4.

(1) Roasting. As with meats, roasting poultry at oven temperatures that are properly adjusted and controlled will yield a nutritious and palatable finished poultry product. Chicken, turkey, and duck are cooked by roasting provided they are suitably aged for this method of cookery. The most frequently used turkey item that is roasted is the boneless, raw, tied turkey which is commonly called a turkey roll. The boneless turkey is removed from its casing, placed in a pan, and brushed with butter or margarine. A thermometer is inserted into the turkey roll, it is placed in the oven at 350° F, and roasted for 3 to 4 hours or until the meat thermometer registers an internal temperature of 170° to 175° F. Boneless turkeys should be left to stand for at least 30 minutes to permit them to absorb juices and for the best results in slicing. Whole, ready-to-cook turkeys are thoroughly washed and drained, rubbed with salt and pepper inside the cavity, and placed breast side up without crowding in roasting pans. V-shaped racks should be used in the roasting pans if they are available. The skin is then thoroughly rubbed with butter or margarine, a thermometer is inserted into the center of the inside thigh muscle and the panned turkey is placed into a 325° F oven. No liquid should be added to the pan. Whole turkeys should be roasted unstuffed for approximately 3 1/2 to 7 1/2 hours depending upon size or until the meat thermometer registers 170° to 175° F. If no thermometer is available, move the leg bone to see if the joint moves readily; if so, the ligaments are tender and the turkey is done. Turkeys should be basted periodically with the drippings that accumulate in the pan. If a turkey begins to brown too soon, a loose tent of aluminum foil can be used to cover it to prevent its drying out or burning. Whole chickens are roasted in the same manner as whole turkeys except that they are roasted at 325° F for a shorter cooking period due to size.

(2) Frying. Chicken is the only type of poultry used in the Marine Corps that is prepared by the frying method. Chicken is fried both in the oven and in deep-fat. Ready-to-cook cut-up chickens are ideal for this product. The chicken should be thoroughly washed under cold running water, drained well, dredged in flour containing salt, pepper, and paprika, and placed in fryer baskets. Fry chicken in deep-fat at a temperature of 325° F for a period of 5 to 15 minutes (depending on the chicken part) until a golden brown color is attained. At completion of cooking, allow the chicken to drain well in the fryer basket or on absorbent paper. Chicken may also be fried completely in the oven. It may be cooked in the oven, coatec with flour, an egg mixture, and crumbs, and then browned in deep-fat, or it may be coatec and browned in deep-fat, placed in roasting pans, and baked uncovered for approximately one hour or until the chicken is tender. Fried chicken should always be cooked well-done. The cooking time for fried chicken should be scheduled so it can be served immediately. This can be accomplished by staggering the cooking process to allow a new batch to be completely cooked and well-drained just prior to emptying the pan being used on the serving line. When absolutely necessary, fried chicken can be held in an open pan in the oven at 200° F.

b. Moist-heat methods. Moist heat is applied to poultry by either braising or stewing. Broiler-fryer chickens, young hens, young toms, and yearling turkeys are used for these methods of cooking when some recipes require the poultry to be cooked with a sauce for flavor and texture variations.

(1) Braising. Braising is a combination of both dry-heat and moist-heat. This procedure is to brown the poultry in the oven or deep-fat and combine it with a sauce. Chicken cacciatore, creole chicken, and pineapple chicken are examples of this method of cookery. To prepare poultry for braising, it is washed, drained, dredged in a seasoned flour, and browned in deep-fat. The poultry is then placed in roasting pans, a flavorful sauce poured over it, and it is baked in the oven for the length of time prescribed by the Armed Forces Recipe Service for that particular recipe.

(2) Simmering or stewing. Stewing is technically the process of simmering poultry at a temperature below the boiling point of 212° F. Numerous poultry dishes are prepared by this method using either chicken or turkey. Potpies, a la kings, chow mein, and even poultry salads are prepared by using stewed or simmered poultry. The poultry is prepared by washing thoroughly, placing it in a steam-jacketed kettle or stock pot containing stock and seasonings, bringing it to a boil, reducing the heat to a simmer, and simmering for a specified time, usually about 2 hours for chicken or 4 hours for turkey. The poultry is then removed from the stock which is used for the sauce or gravy after it is thickened by adding other ingredients. The poultry flesh is usually removed from the bones and combined with the sauce or gravy which may either be served at that point in some recipes or panned and cooked further in the oven for other recipes. Poultry for salads is simply simmered, the flesh removed from the bones, chilled, and combined with other ingredients to produce a variety of salads.

## 5-7. MEAT AND POULTRY CARVING

The serving appeal of roasted meats and poultry can be enhanced by the manner in which they are carved. In Marine Corps dining facilities, the hand carving of roasted meats and poultry on the serving line is a practical method of controlling portions, eliminating waste, and adding a personal touch for each individual diner. A well-groomed cook to carve the roasts and a garnished cutting board also adds eye-appeal to the meal being served. It is important for the carver to possess three essential tools to render good service: a sharp carving knife, a meat fork, and a steel to keep a true cutting edge on the knife. All meats and poultry should be trimmed of excess fat, strings, or netting in the galley to keep the working area clean and neat in appearance. The primary rule in carving meat and poultry is to carve across the grain. The practice of carving across the long fibers of meat or poultry shortens them to aid digestion and to produce a uniformly sliced portion. Roasted meats and poultry should be allowed to set for periods of time as prescribed in the Armed Forces Recipe Service. Some specific cuts of meat may require special carving procedures to obtain the best cut and the highest yield of palatable meat as illustrated in figure 5-1. Canned pear-shaped hams should be carved by cutting straight across the butt end and dividing the remaining piece in half by slicing as shown.

Cutting the butt end as illustrated is contradictory to the rule of cutting across the grain; however, canned hams are processed to tenderize the complete ham with little or no evidence of any long tough meat fibers. Also, this method yields the maximum number of uniform portions. Beef brisket as used for corned beef is placed on the carving board with the round side facing away from the carver and sliced in rotation from three sides to yield the maximum number of palatable portions. Attention should be given to individual diners as to their preference in the thickness of their portions. Some may request a thick slice while others may request thin slices. Regardless of individual desires and preferences, each portion should weigh the same. In the case of roast beef, the portion allowance for each person is 4 1/2 ounces. This means that each person should receive 4 1/2 ounces of roast beef, either as one thick or two thin slices. It is also a morale booster and favorable to your diners if they are given a choice of roasts that are cooked to different degrees of doneness. Thus if it is practical, serve roasts that are cooked well-done and also a few roasts that are cooked to a lesser degree of doneness such as rare or medium to satisfy personal preferences. Of course this preference would only be offered when using meats that can be cooked to a lesser degree than well-done such as beef or lamb. Pork should never be served other than well-done. A portion scale can also be of great help to the cook carving roasts on the serving line.

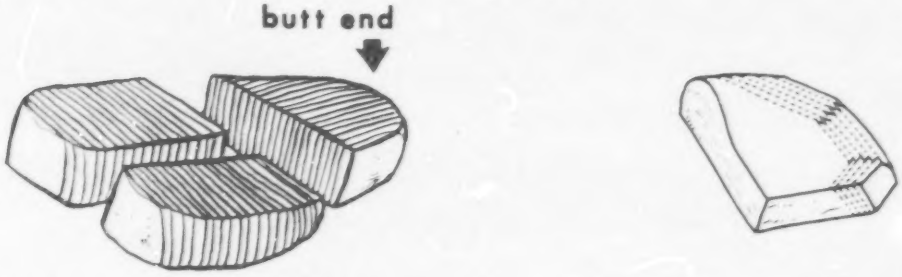


Fig 5-1. Hand carving pear-shaped canned ham and corned beef brisket.

## 5-8. SUMMARY

This chapter has covered the cooking methods for meats, fish, shellfish, and poultry. It considered the dry-heat methods of roasting, broiling, grilling, and frying and the moist-heat methods of braising, simmering, and stewing as they apply to meats, fish, shellfish, and poultry. Emphasis has been placed on the special problems of cooking thawed and frozen forms and the importance of proper carving procedures.

## 5-9. COURSE CONCLUSION

Now that you have completed the lessons for this course, it is time to prepare for the final examination. Your best preparation will be to review the lessons until you can answer all of the questions correctly without reference to your text. When you can do this, you may be sure you will have no trouble with the final examination. If you have the time available to you, a second reading of the chapters of the text will be helpful. Good luck on your final examination.

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# MEATS AND MEAT COOKERY

## Lesson 5

## Principles for Cooking Meats, Poultry, Fish, and Shellfish

STUDY ASSIGNMENT: MCI 33.18a, Meats and Meat Cookery, chap 5.

LESSON OBJECTIVE: Upon successful completion of this lesson, you will be able to identify methods for cooking thawed and frozen meats, poultry, fish, and shellfish, and the correct methods for carving meats and poultry.

WRITTEN ASSIGNMENT:

A. Multiple Choice: Select the ONE answer which BEST completes the statement or answers the question. After the corresponding number on the answer sheet, blacken the appropriate box.

Value: 1 point each

1. Which of the meat cooking principles is of the MOST importance when cooking frozen meats?

   a. Cooking at lower temperatures for longer times
   b. Cooking at higher temperatures for shorter times
   c. Seasoning well to improve the taste
   d. Inserting a thermometer into the thickest meat muscle

2. Which of these meats should be completely thawed prior to cooking?

   a. Rib eye steak
   b. Liver
   c. Roasts
   d. Diced beef

3. The shape and moisture in liver are best retained when it is cooked

   a. at low heat temperatures.
   b. at high heat temperatures.
   c. from a completely thawed state.
   d. from the frozen state.

4. Liver that turns green after it is cooked will only affect its

   a. taste.
   b. appearance.
   c. aroma.
   d. shape.

5. What causes liver to turn green after it has been cooked?

   a. Contamination from lengthy storage
   b. Preparation in unclean utensils
   c. Exposure to air causing pigment oxidation
   d. Either overcooking or undercooking

6. Why should fish and shellfish foods be handled with special care?

   a. To avoid hand injuries caused by bones and shells
   b. To avoid tearing their tender flesh
   c. To preserve the shells for later use
   d. To prevent their flesh from becoming rubbery and tough

7. The two basic methods used to cook meats, poultry, fish, and shellfish are

   a. roasting and frying.
   b. braising and simmering.
   c. moist-heat and dry-heat.
   d. broiling and grilling.

8. The method chosen to cook a particular cut of meat is determined by

a. its classification of being a tender or less tender muscle.
b. the thickness of its fat covering.
c. the thickness of the cut.
d. the depth of its red or pink color.

9. Poultry is cooked by either dry-heat or moist-heat depending on the

a. size of the bird.
b. height of the bird.
c. age of the bird.
d. amount of fat in the cavity.

10. Green shrimp and clams are most commonly prepared by cooking in

a. the oven.
b. liquids.
c. deep fat.
d. shallow fat.

11. When applied to meats, the word baked is used incorrectly for

a. roasting.
b. broiling.
c. grilling.
d. frying.

12. The cookery method where heat is applied directly to the food being cooked is called

a. roasting.
b. grilling.
c. frying.
d. broiling.

13. Meats, fish, shellfish, and poultry are deep-fat fried if they

a. are completely frozen.
b. are completely thawed.
c. have been breaded or batter-dipped.
d. have been parboiled first.

14. The method of browning meat in fat and later adding a liquid to it is called

a. frying.
b. braising.
c. simmering.
d. stewing.

15. Meats that are boiled for long periods of time will produce a product that

a. will carve evenly.
b. is uniformly cooked.
c. is dry, stringy, and tough.
d. retains all of its nutritional properties.

16. When roasting meat in the oven, roasting pans should have low sides to

a. permit the roasts to be turned easily.
b. allow the roasts to be observed.
c. permit hot air to circulate freely.
d. allow the roasts to be basted easily.

17. Why are racks placed in pans that are to be used for roasting meats?

a. So the seasonings will penetrate the bottom of the roast
b. To prevent the meat from cooking in its drippings
c. So the drippings can be ladled out for basting
d. So liquids can be poured over the entire roast

18. After removing roasted meats from the oven, they should be

a. served immediately while piping-hot.
b. refrigerated until they are ready for use.
c. sliced and set on the oven door to keep warm.
d. allowed to stand for at least 20 minutes.

19. Which would be considered best for broiling?

a. Diced beef
b. Rib roast
c. Frozen beef patties
d. Meat loaf

20. When cooking steaks on the griddle, the outside fat and membrane should be cut with a knife to

a. prevent curling of the meat.
b. present a better appearance when done.
c. season the center of the meat.
d. allow the melted fat to run off.

21. When turning meats on the griddle, you will not be spattered with hot fat if they are turned

a. facing toward you.
b. facing away from you.
c. from left to right.
d. from right to left.

22. Which deep-fat fried meat dish can be cooked well-done and tender without further cooking in the oven?

a. Fried rabbit
b. French fried liver
c. Chicken fried steak
d. Breaded pork slices

23. Which cookery method would be used to cook stews and pot roasts?

a. Broiling
b. Frying
c. Moist-heat
d. Dry-heat

24. When meats are simmered, the liquids should NOT reach a temperature of

a. 180° F.
b. 190° F.
c. 200° F.
d. 212° F.

25. Which cookery method is NOT recommended for cooking fin-fish?

a. Baking
b. Simmering
c. Broiling
d. Frying

26. Moist-heat cookery would be BEST for cooking

a. clams.
b. haddock.
c. halibut.
d. flounder.

27. When adding sauces or garnishes to cooked fish and shellfish, they should be used

a. in abundance.
b. sparingly.
c. to camouflage the food.
d. to change the natural flavor of the food.

28. The proper method of panning fish fillets to be baked is to place them in

a. baking pans on their sides.
b. sheet pans with the skin down.
c. sheet pans with a small amount of water.
d. covered inserts.

29. Baked fish can be tested for doneness by

a. inserting a thermometer into the thickest part.
b. cutting it in half with a sharp knife.
c. pricking the thickest outer edge with a fork.
d. squeezing it gently.

30. Grilled fish is cooked on a well-greased griddle with the thermostat set at

a. 350° F.
b. 400° F.
c. 425° F.
d. 450° F.

31. When frying breaded molded shrimp and fish portions, they should be

a. fried until crisp.
b. completely thawed prior to cooking.
c. partially thawed prior to cooking.
d. cooked from the frozen state.

32. Breaded fish portions and fish sticks are considered to be done when they

a. are easily broken in half.
b. are lightly browned.
c. rise to the surface of the fat.
d. sink to the bottom.

33. How are live lobsters cooked by the simmering method of moist-heat cookery?

a. By starting in cold water and building heat gradually
b. By plunging live into boiling salted water
c. By placing in covered roasting pans with a small amount of water to steam
d. By allowing them to die and plunging them into boiling seasoned water

34. When shellfish such as lobster and shrimp are simmered, they are done when the shell turns _____ in color.

a. light-green
b. dark-green
c. red
d. white

35. Which poultry item is most commonly cooked in Marine Corps dining facilities by roasting?

a. Boneless, raw, tied turkeys
b. Whole turkeys
c. Cut-up chickens
d. Whole chickens

36. The boneless raw turkey is sufficiently cooked when the internal temperature registers ____° F on the meat thermometer.

a. 145° to 150
b. 155° to 165
c. 170° to 175
d. 185° to 190

37. An EXCEPTION to the 20 to 30 minute standing period for most roasted foods, boneless turkeys should stand for _____ minutes to absorb juices and for better slicing.

a. 5
b. 15
c. 60
d. 90

38. When roasting whole turkeys, their degree of doneness can be checked without the aid of a thermometer by

a. moving the leg bone to see if the joint moves readily.
b. detaching the wing from the breast joint.
c. cutting the leg bone at the thigh joint.
d. piercing the breast to see if any blood seeps out.

39. The skin of a whole turkey is kept moist while roasting by

a. placing strips of bacon over the breast.
b. basting periodically.
c. adding a small amount of water to create steam.
d. covering the pan after the turkey is browned.

40. When turkey browns too soon in the oven, it can be prevented from drying out by

a. turning the thermostat down to 275° F.
b. covering with a loose tent of aluminum foil.
c. turning the breast down into the drippings.
d. turning the back down into the drippings.

41. Whole chickens are roasted in the same manner as turkeys EXCEPT that they are

a. roasted for a shorter period of time.
b. roasted at a higher temperature.
c. roasted with the breast down.
d. not basted while cooking.

42. In what is chicken washed prior to cooking?

a. A solution of vinegar and water
b. A solution of baking soda and water
c. Running cold water
d. Soap and water

43. If absolutely necessary, fried chicken can be held in an open pan in the oven at a temperature of

a. 200° F.
b. 250° F.
c. 300° F.
d. 325° F.

44. When poultry is cooked by braising, it is also combined with a sauce or gravy which

a. insures even cooking.
b. shortens the cooking time.
c. is seasoned by the poultry.
d. imparts a particular flavor.

45. The stewing method of cooking is similar to which other method of cookery?

a. Roasting
b. Braising
c. Simmering
d. Sauteing

46. The method for cooking chicken as an ingredient for chicken potpies is to_____ it.

a. broil
b. simmer
c. roast
d. fry

47. Prior to mixing boned turkey meat with other ingredients for salad, the turkey should be

a. well-garnished.
b. reheated.
c. well-chilled.
d. reseasoned.

48. Three essential tools required to carve roasted meats are a steel, a sharp carving knife, and a

a. meat-fork.
b. pair of food tongs.
c. mesh glove.
d. protective apron.

49. What is the purpose of using a steel?

a. It is used to sharpen knives.
b. It trues the cutting edge of the knife.
c. It keeps the knife blade shiny.
d. It holds the meat for carving.

50. What should be done with excess fat, strings, or netting trimmed from roasted meats?

a. They should be moved to the side of the cutting board.
b. They should be trimmed and discarded in the galley.
c. Serve them with the meat portions.
d. Store them under the serving line.

51. What is the purpose of cutting roasted meats and poultry across the grain?

a. To use the outer edges of the roasts first
b. To be sure of serving the long meat fibers
c. To shorten the meat fibers for tenderness
d. To produce larger portions

52. The purpose of cutting pear-shaped canned hams into three equal pieces prior to carving is to

a. portion the meat so personnel may receive two slices.
b. produce a maximum yield of uniform portions.
c. provide ease in carving for the cook.
d. portion it for cross-grain slicing.

53. When carving and serving roasts from the serving line, personnel requesting thick or thin slices should

a. receive the same amount in weight.
b. step back and wait until that size is sliced.
c. be given no preference.
d. have their portions cut slightly short.

54. What is the purpose of portion control in serving foods?

a. To make the meat go further
b. To distribute foods equally to all personnel
c. To avoid serving second helpings
d. To cut down on the amount of food required

55. Which item of food service equipment is used to aid the cook carving roasts on the serving line?

a. Meat thermometer
b. Measuring spoons
c. Portion scale
d. Mesh apron

Total Points: 55

* * *

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Lessons ____ Manual ____ Other _____

7. ☐ CHANGE - Rank _____ Name _____
Social Security Number ☐☐☐-☐☐-☐☐☐☐
RUC _____

8. ☐ OTHER (explain) _____

Note: This form will not be returned by MCI. If request is valid, transaction will be on next UAR or on _____ form.

SIGNATURE-TITLE OR RANK
(MUST BE CO OR REPRESENTATIVE)

FOR MCI USE ONLY
1. D ____
2. On SMF ____ R ____ L ____
3. C ____
4. L ____
5. Q ____
6. P ____
7. E ____
8. _____

DATE COMPLETED _____

ORIGINATOR CODE _____

Student: Detach and retain this portion.

DATA REQUIRED BY THE PRIVACY ACT OF 1974
(5 U.S.C. 522A)

1. AUTHORITY: Title 5, USC, Sec. 301. Use of your Social Security Number is authorized by Executive Order 9397 of 22 Nov 43.

2. PRINCIPAL PURPOSE(S): The Student Request/Inquiry is used to transmit information concerning student participation in MCI courses.

3. ROUTINE USE(S): This information is used by MCI personnel to research student inquiries. In some cases information contained therein is used to update individual student records maintained by the Marine Corps Institute.

4. MANDATORY OR VOLUNTARY DISCLOSURE AND EFFECT ON INDIVIDUAL NOT PROVIDING INFORMATION: Disclosure is voluntary. Failure to provide information may result in the provision of incomplete service to your inquiry. Failure to provide your Social Security Number will delay the processing of your inquiry request.



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